

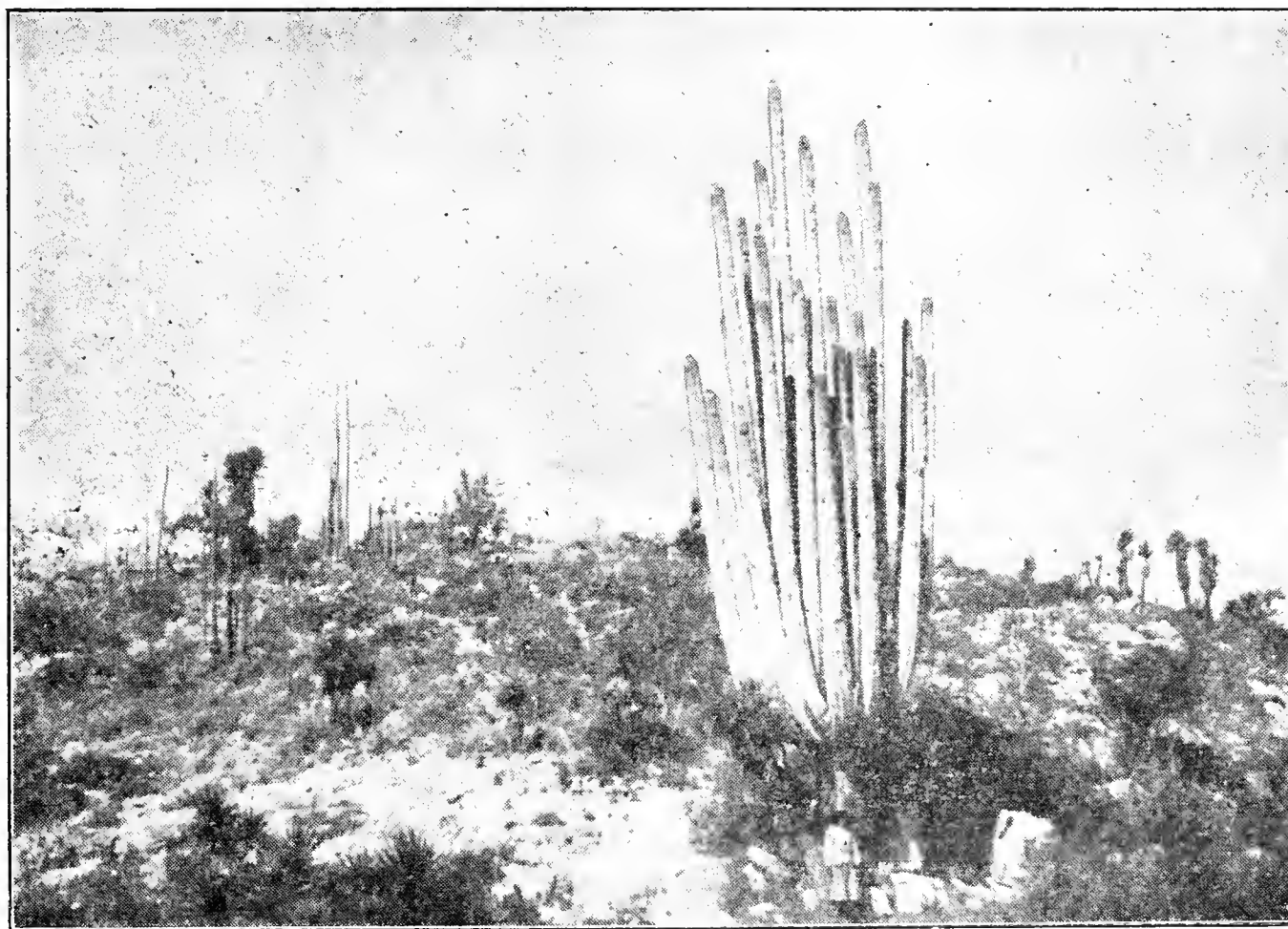
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Cactus Catalog

Texas Centennial Edition 1936-37



SHINER CACTUS NURSERY

2202 Market St.

Price 50c

Laredo, Texas

Texas and Mexico Welcome Nature Lovers

GREETINGS FROM LAREDO, TEXAS, CHAMBER OF COMMERCE

The vast territories of Texas and Mexico offer to nature lovers the greatest variety of climate, plant life and scenery found anywhere in the world.

In a few hours, a traveller can pass from semi-arid desert country, with its magnificent cacti and shrub life, to rich irrigated lands, deep green with citrus groves and winter vegetable crops. In some parts of Mexico it is possible in one hour's drive to pass from an alpine climate to the lush growth of the tropics and watch the changing nature of trees and flowers as you descend thousands of feet over a paved highway in the shadow of perpetually snow-clad volcanoes.

Texas is already well known to millions of tourists from other parts of the United States. With 17,000 miles of paved highways and thousands of miles of subsidiary roads any part of this industrial, agricultural and mining empire can be easily reached.

1936, the Centennial year of Texas Independence from Mexico, will be celebrated all over the State by numerous festivals, fairs, memorial services and exhibitions. The focus of attention will be the great Dallas Exposition where millions of dollars are being spent to portray to visitors the vast resources and activities of the state. Opening on June 6th, this tremendous Fair, which not only rivals the Chicago Worlds Fair of two years ago but actually surpasses it in scientific and industrial expositions, will last throughout the year, and indications are that nearly ten million visitors will pass through the gates during the season.

Many who visit the Texas Centennial will also include in their trip a visit to the interior of Old Mexico.

This fascinating land of the ancient Toltecs and Aztecs is just being opened to automobile tourists through the completion of the Pan American highway between Laredo, Texas and Mexico City. This magnificent engineering feat leads the traveller from desert to rich

tropical lowland jungles, from palm forests up and up the sides of mighty mountain ranges to the great central plateau of Mexico at an elevation of 7600 feet.

On the trip from the border to the capital of the Southern Republic an indescribable variety of scenery and plant life presents itself. In one hour, as far as the eye can see are vast stretches of desert shrubbery and flowering cacti. In the next hour there will be great forests of palm trees and a little later huge tropical hardwood trees with rare orchids clinging to their lofty branches.

The new highway, already being traveled daily by hundreds of tourists, is disclosing beautiful and quaint Indian villages which, until recently, were practically unknown to any but the hardest tourists who would require weeks of horseback riding to reach them.

From Mexico City there are many interesting and fascinating trips leading to other parts of the high plateau, up the slopes of great volcanoes, or over the rim of the valley and down to the magnificent tropics bordering the Pacific coast.

Tourists before entering Mexico through Laredo, which is the only gateway to the interior of the country by automobile, should stop at one of the information bureaus maintained by the Laredo Chamber of Commerce for their convenience.

At these offices preliminary papers for the tourist passports and car bonds can be obtained as well as the latest information about the highway and expert guidance in the planning of itineraries. All of these services are free of charge.

With the opportunity now presented of combining a visit to the Texas Centennial Exposition with the long desired trip to Mexico, it is expected that the greatest number of tourists in the nation's history will enter Texas during 1936 and most of them continue on into Mexico.—Laredo, Texas Chamber of Commerce.

Texas Centennial Edition

ILLUSTRATED CATALOG AND
REFERENCE BOOK

1936

*125 New Cuts
100 Illustrations of over
250 Species*

Price 50c

SHINER CACTUS NURSERY

2202 Market St.

Laredo, Texas

Shiner Cactus Nursery a Center of Interest for Visitors to Laredo

From The Laredo Times of March 23, 1936

A big convention and rare treat for Laredo were announced this morning by Olin G. Bell, vice president of the Texas Academy of Science with the news that that organization would hold its spring regional meeting in the Gateway to Mexico, April 10th, 11th, and 12th.

Three hundred delegates are expected for this important meeting which attracts the leading scientists, geologists, geographers, biologists and engineers of the state.

At the close of two technical sessions, Friday April 10th there will be two short trips arranged, one to the Shiner Cactus Nursery, which through the kindness of Mrs. Shiner, manager, will be open for inspection by the Academy members. The other will be a visit to the Antimony smelter through the courtesy of the management, to permit the Academy members to see this unique attraction.

A CHICAGOAN WENT HOME AND WROTE

SHINER'S AT LAREDO, TEXAS—CENTER OF THE CACTUS HOBBY

In this tremendously interesting industry, these people are students of every form of cacti, from each part of the world. For those who love the romance of a cactus garden there is no finer nor wider assortment than the many varieties to be found here. In the rock gardens of California, in the Atlantic East and the Middle West cactus growing is an interesting hobby to many widely travelled people, and for you who are "hobby hunting", start with a miniature cactus garden for your table, or a larger variety for your grounds. We suggest this beautiful novelty as a very interesting diversion. "Happy is the man who has a hobby." Now, as you tour Texas or Mexico or the citrus country of the Lower Rio Grande Valley, visit Laredo—and see for yourself.

—R. H. Williams in the "Home Pictorial", Chicago.

EVEN A TEXAS EDITOR WAS IMPRESSED

"Frankly the trip through the Shiner Nursery at Laredo was a revelation. To a layman it was inconceivable that one family of plants could take such an interesting variety of varying shapes and forms.

There was the Arizona giant cereus, of columns and off-shooting columns, that grows to a height of 25 feet or more. There was the watermelon-shaped Ferocactus, imported from Mexico, a cluster of which sometimes weighs as much as 2500 pounds.

There were several species of one kind grafted on the native stock of another. There were squat, dome like plants, and tall slender ones shaped like a cane. There were some that looked like a rooster's comb, others like a bottle, and others, in silhouette like the gnarled branches of a tree in winter.

Yet one thing all cactus plants have in common: symmetry of design which in many instances is as intricate and as delicate as Venetian lace. If you have read this article thus far you may still be wondering what there is about a cactus plant. Frankly I don't know. But I can say that once the cactus-growing bug bites you, you stay bit. I say this because I have observed that the cactus fancier is inordinately enthusiastic about his rock garden.

Believe it or not, there are a number of periodicals in this country and abroad devoted in their entirety to cactus. Strangest of all is the correspondence which is always in motion between the growers themselves. They exchange seed, they swap specimens, they write each other about insects and insect control. A spirit of camaraderie exists that is not found among addicts in ordinary hobbies.

So—if you are on the lookout for an engaging hobby let me recommend that you look into this cactus fancier business."

—Paul Franke, Editor "Acco Press", Houston, Texas.

WIDELY TRAVELLED MAGAZINE WRITER ALSO SUCCUMBS TO CACTUS

From "The Pan American Ambassador"—Texas Centennial Herald

ARE YOU LOOKING FOR A FASCINATING HOBBY?

Why Not A "Miniature Mexico"

By CLAIRE McMURTRY



A Cactus Garden ready made, and a cute little Mexican gardener to help care for it.

"When the Editor asked me to get a story about the Shiner Cactus Nursery for The Pan-American Ambassador I had no idea what a delightful treat was in store for me. My previous acquaintance with cacti had been limited to those growing along the road-side or in some one's yard and I little guessed there were so many hundreds of species or that anything as prickly and thorny as a cactus could be so fascinating."

"Visitors and tourists along the Pan-American Highway are shown in the Shiner Cactus Nursery the workings of true Pan-Americanism, albeit in miniature.

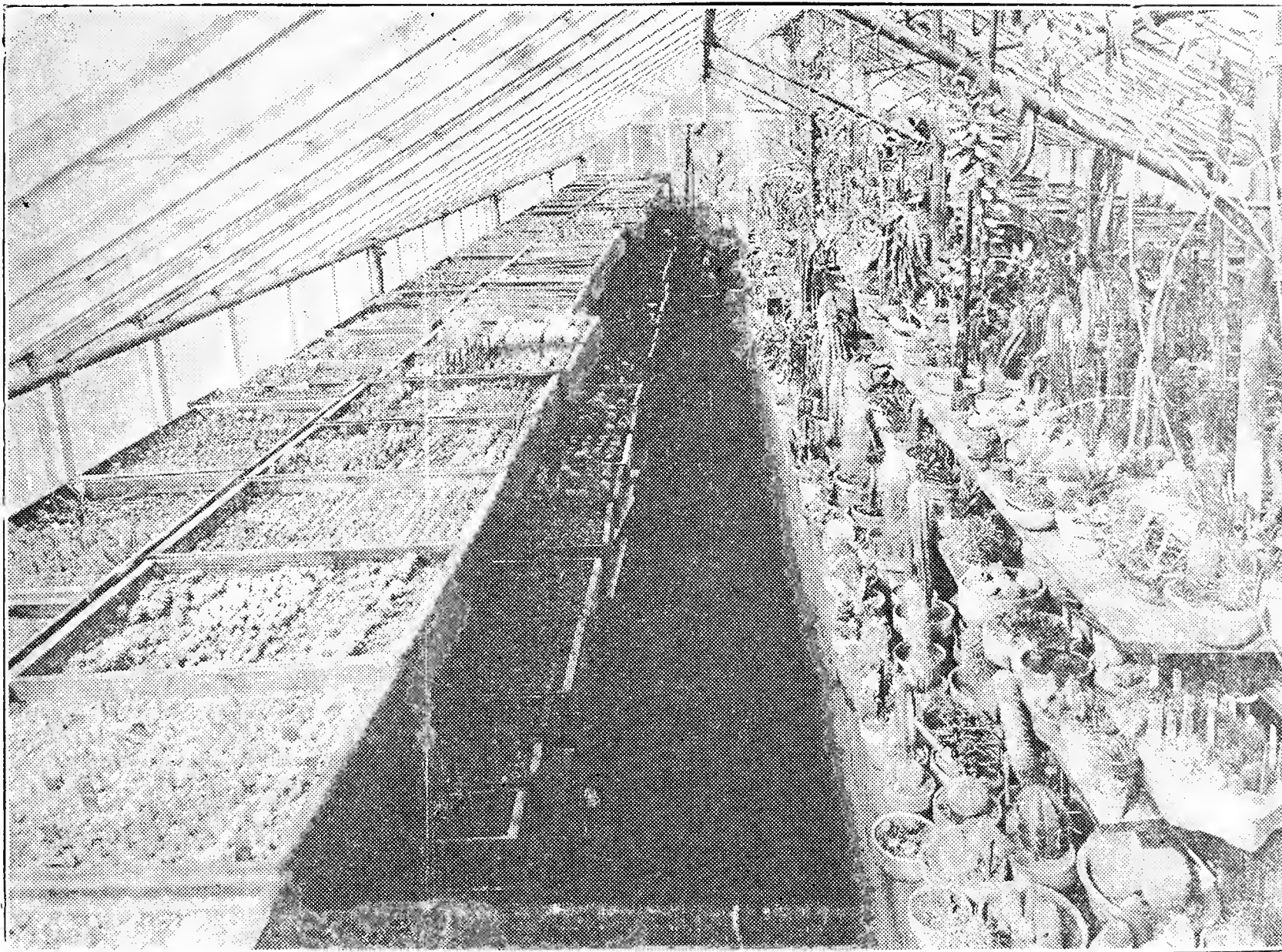
Here are seen natives of all the countries of North, Central and South America and the related Islands, all living together in the greatest of harmony and good will."

"By this time I knew full well I had been bitten by the cactus bug, and was so completely fascinated that I asked Mrs. Shiner if it would be possible for me to secure a small collection of my own,—one that I could keep in my sunny living room window.

She led me to a garden table on which rested an attractive pottery container. Across one side was cemented a miniature mountain, at the base of which flourished some twenty or more dwarf varieties of cacti and African succulents. In the center of this exotic garden stood a tiny Mexican gardener in his colorful sombrero, picking tunas from an opuntia with a long sharp stick.

This was too much! A cactus garden ready made, and a cute little Mexican gardener therein to help me care for it.

So whether you are a visitor in our little city or a native Laredoan who has thus far overlooked this unique plant collection right at your door, I advise you to visit it at your earliest opportunity. And if the cactus bug bites you like it bit me,—well, you'll find yourself with a most fascinating new hobby!"



PICTURED HERE IS ONE-HALF OF THE SEEDLING GREENHOUSE OF THE SHINER CACTUS NURSERY AT 2202 MARKET STREET, LAREDO, TEXAS

Expensive imported seeds are planted here each Spring in red wood flats of especially prepared soil, with tweezers, to insure careful rows and correct naming.

The world's rarest species from the West Indies, Mexico, Central America, all the countries of South America and Africa are in this way made available to collectors of rare plants.

Mexico is joining the United States in a plant conservation movement and very soon will forbid all export of plants of her cactus species. Seedlings of Mexican species will therefore become increasingly valuable through the years.

Collectors are learning that seedlings are more successful in meeting the housing and space requirements of the average home sunny window garden or small conservatory. They transplant more successfully, grow better, make up collections of rarer species, and give greater pleasure than the average collection of United States desert species.

Use of seedlings also furthers the conservation of natural plant life for which there is need all over the country. Many cactus species will soon be extinct through the ravages of collectors for the 10 cent stores, who leave plant death and landscape destruction behind them as they go about their work.

Cactus and succulent seedlings may be shipped when they are between one and two years old. They are priced at an average of 10 cents per year of growth. If you have ever raised seedlings and have figured cost of seed, percentage of germination and the cost and care necessary to get them through their infancy you realize this price is most reasonable.

This nursery packs its seedlings for shipment in a nest of their own moist seedling soil and wrapped in waxed paper, to reach their destination fresh and in best of condition for quick re-rooting. Full directions for planting and care accompany all shipments.

TRAVELLERS WILL ENJOY SCENIC BEAUTY OF MEXICO

Travellers to Mexico City begin to realize that they are approaching the Tropic Zone as they travel the highway south from Laredo, Texas to Monterrey, Mexico. The giant *Yucca australis* is of outstanding interest appearing first north of Sabinas, Hidalgo, and continuing to north of Monterrey and then out on the plateau to Saltillo and its mountains.

Scenery on the highway to Victoria is predominantly tropical of the lowlands—its plants including palms, bananas, avocados, oranges, etc. The little farm homesteads are most colorful and picturesque. One's camera must be plentifully supplied with films to take all the views which appeal with the thousand and one appeals of Old Mexico.

South of Monterrey, out of the lowlands into a rolling hilly country, thickly wooded, the observing cactus hunter's trained eye will begin to note *Selenicereus spinulosus* climbing all through the tops of the tall trees. What a picture it must be when in flower.

A good many kilometers north of Victoria one begins to see *Lemaireocereus pruinosus*, first as rooted cuts planted to mark fence lines then very soon as big, many branched trees, as illustrated later in this book. South of Victoria begin to appear the first *Cephalocereus palmeri*. They must be watched for very carefully at first if they are to be seen. Later in the Cuesta de Llera section they may be seen distinctly both close to the highway and high up on the steep hill sides, their snowy white heads shining in contrast to the deep green of other plant growth.

On the Llera plateau many of the trees along the highway bear the orchid-like *Tillandsias*, four species or more. They look like miniature *Hechtias* with their silvery green to deep red colorings. Here also are seen colonies of *Acanthocereus pentagonus*, tall trees of *Nopalea dejecta*, and brushy *Opuntia scheeri*, *Opuntia stenopetala*, *Opuntia microdasys*.

Among the smaller species one finds are *Echinocereus scheeri*, *E. blancii*, *E. pentaplophus* in much stouter form than is ever found in the U. S., *Ancistrocactus megarrhizus*, *Neomammillaria multiceps*, *N. roseo-alba*, *N. macracantha*, *N. candida*, *N. viereckii* and *N. pilispina*; *Ariocarpus trigonus*, *Astrophytum asterias*, *Astrophytum myriostigma* var. *tamaulipensis*, *Ferocactus rafaelsensis* and many more.

Below Jacala the notable large *Cerei* include *Myrtillocactus geometrizans* and several varieties of *Lemaireocereus pruinosus* including *queretaroensis* and *eburneus*, *Ferocactus melocactiformis* and *Echinocactus ingens grandis* grow to sizes far beyond the recognition of the average cactus student.

The many species of *Hechtias*, *Agaves* and *Yuccas* are of increasing interest the further one penetrates into Mexico. Up on the plateau above Saltillo one

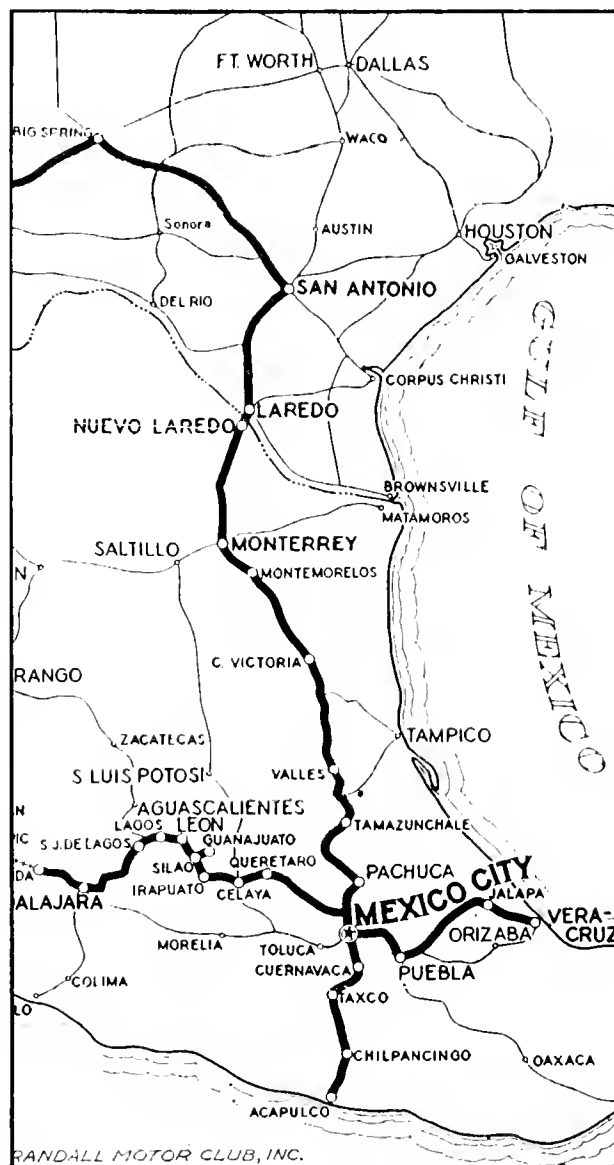
Agave is cultivated solely for production of mescal, which is a distilled drink. Near Victoria, *Agave sisalina* is grown for fiber production,—the sisal hemp. While about Mexico City immense acreages are devoted to cultivation of *Agave salmiana* for its production of pulque, a drink fermented from the juice extracted fresh each morning from the hearts of the big plants which have reached flowering stage. These plants are truly giants, often having a spread of over 30 feet.

Mexico City and much of southern Mexico has an elevation of over 7,000 feet and its climate is very different from what one associates with the Tropical Zone. It is temperate, dry and healthful with rainy season from April until September. Visitors at any time should carry warm clothing.

The Instituto Biologia in Chapultepec Park extends friendly welcome at all times to botanists and plant students. Miss Helia Bravo, professor of botany in the National University and member of the staff of the Institute is a member of the Cactus and Succulent Society of America and a frequent and valued contributor to its magazine.

Wonderful highways with scenery unequalled anywhere in the world lead out in all directions from Mexico City to habitats of many species where they may be admired and enjoyed as Nature planted them.

Tourists to Mexico as they return to the United States, again through the port of Laredo will visit the Shiner Cactus Nursery and select collections of miniatures and seedlings of the giant plants which they saw standing out so prominently in all Mexican life and scenery.





Yucca australis

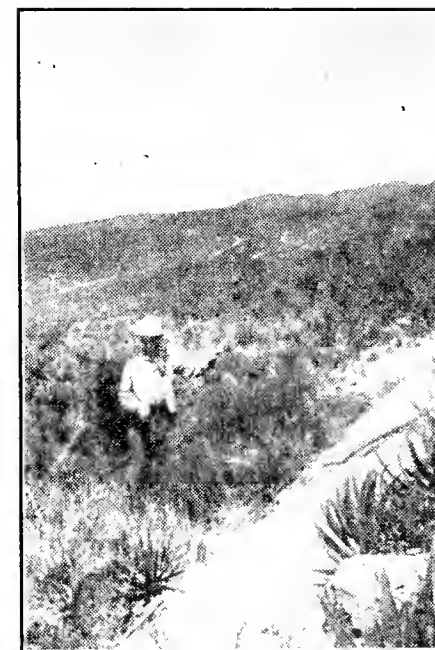
Looking down from Diamante Trail
above Saltillo, a cactus paradise.Saddle back Mountain,
MonterreyOld church and picturesque scenery on turn of Highway,
south of Victoria.

Where cacti are found

Picture made at an elevation of 5000 feet above the valley, fails to show the many turns made reaching the top, also the large rocks in the road. This trail climbs the 5000 feet in some 5 or 6 miles which explains why Mexican cacti when obtainable are valuable members of a collection.

Off the beaten trail, a natural
tunnel thru stratas of rock,
West of Victoria.

Picture taken on the Pan American Highway along the Cuesta de Llera looking out across a deep valley 12 or 20 miles across (it is impossible to judge) occupied by volcano shaped domes like that here shown. The perfect condition of the wide highway from Monterrey south gives the tourist freedom to enjoy to the last thrill the most spectacular and utterly different trip which it is possible to take on the North American continent.

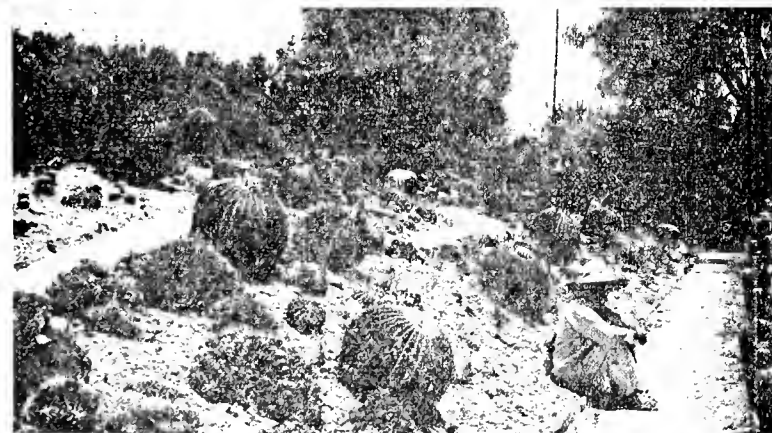
Dr. W. E. Lowry, Sr. on a cactus
photographic trip in Mexico. Giant
specimens shown are Ferocactus
pringlei.



Left foreground are shown monstrose Cerei.



Right foreground—Opuntias and Nopaleas of Mexican origin



The large globular cacti are Echinocactus grandis



In Chapultepec Park near Mexico City and in many sections of the city are to be found notable cactus gardens.

Leading out from Mexico City are good highways to different cactus regions among them those to Tehuacan, Ixmiquilpan and Mextitlan. These drives are some of the most beautiful in Mexico and probably in the whole world, of duration 3 to 7 hours.

These 5 pictures made in the cactus section of the National Botanical Gardens.

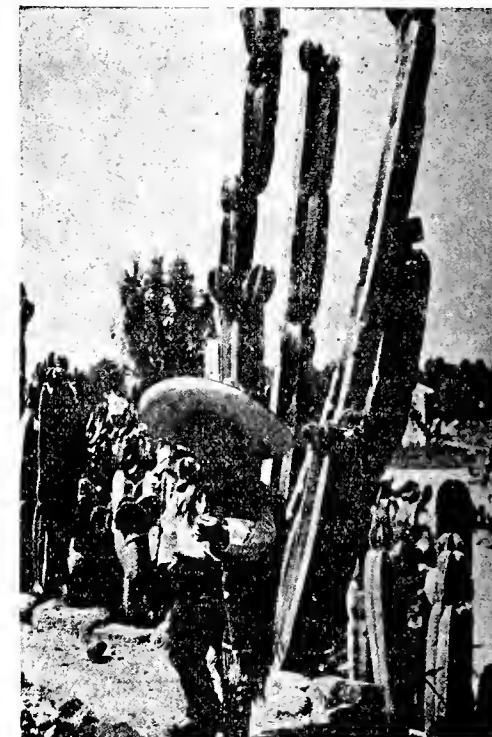


Upper left center—Cephalocereus hoppenstedtii.

Upper right center—giant columnars are Ferocactus pringlei.

Lower right—globulars are again Echinocactus grandis.

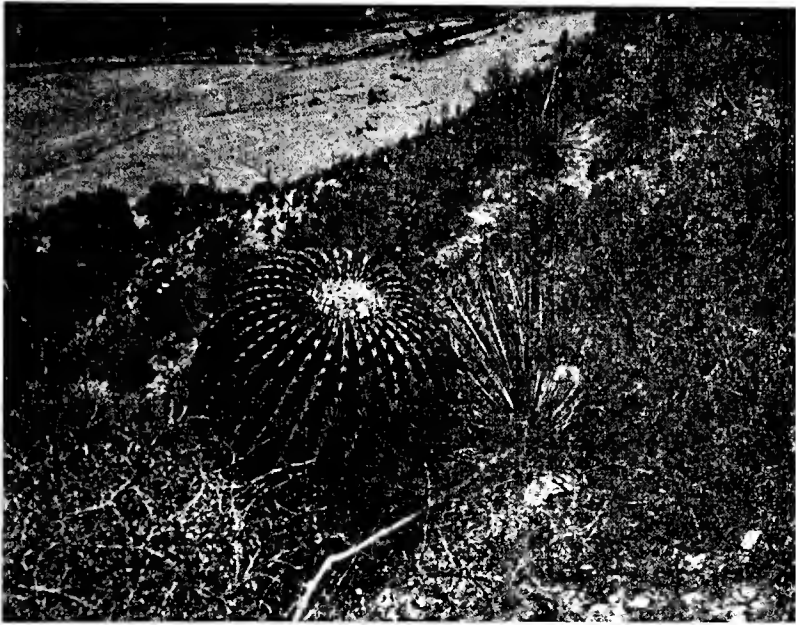
Photographs courtesy of J. Stuart Boyles, Houston, Tex.



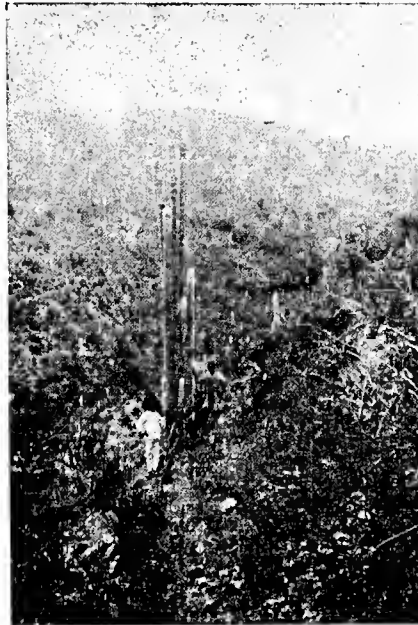
Pachycereus marginatus



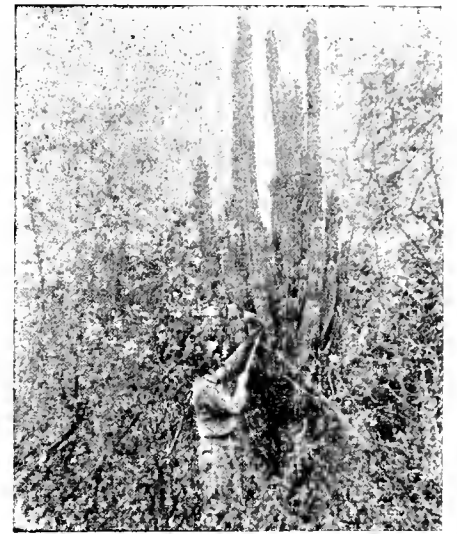
Lemaireocereus dumortieri, Cuernavaca, Morelos, Mexico.



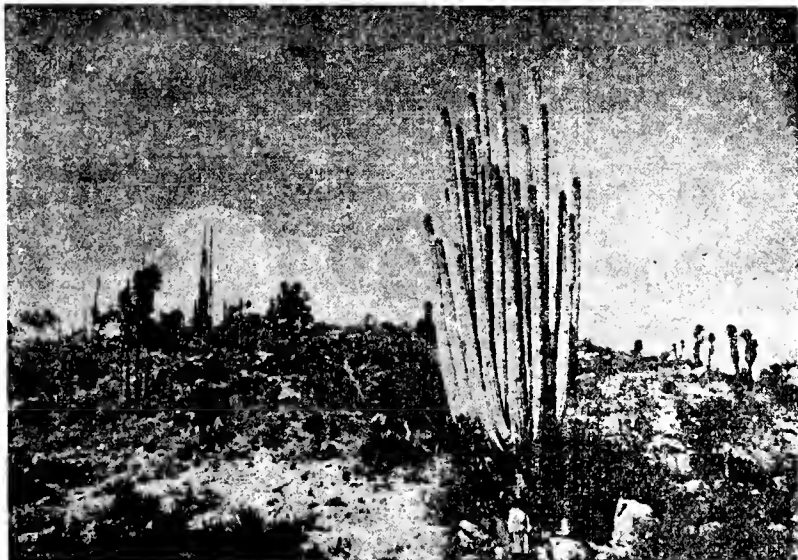
Echinocactus visnaga.—On mountain side, Mezquititlan—
Photograph—Prof. Helia Bravo.



Seeing for the Unbelieving. *Cephalocereus senilis* growing to a height of over 40 feet.



Cephalocereus palmeri as seen from the Pan American Highway below Victoria, Tamaulipas.



Pachycereus chrysomallus.—Tehuacan, Mexico. Photograph—Prof. Helia Bravo.



Gathering *Cephalocereus senilis* in Mexico.



Lophocereus schottii growing in Mexico.



Pereskia
pereskia

Pereskopsis
chapistle



Nopalea dejecta—South of Victoria, Tamps. along Pan American Hiway. With definite trunk, tall to 20 or more feet. Joints narrow, bright green; odd flower, pinkish red.



Opuntia glomerata



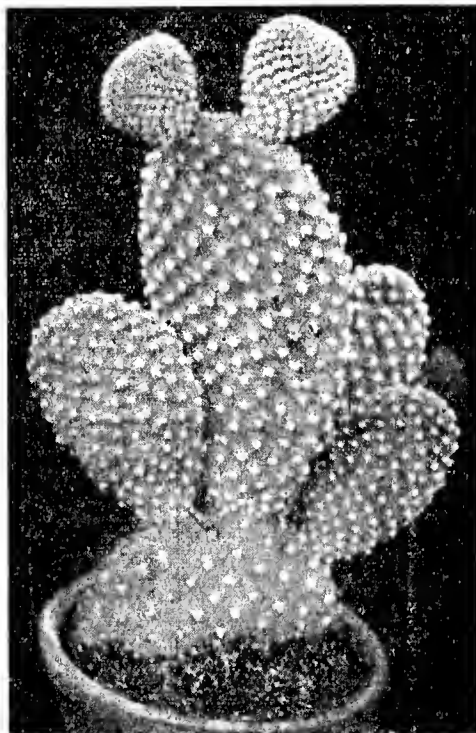
Opuntia retrorsa

Opuntia glomerata—Argentina. Small globular, jointed, with curling paper-like spines. Rare. A representative of *Tephrocactus*.

Opuntia retrorsa—N. Argentina. In nature grows prostrate. Areoles prominent, subtended by a long purplish blotch. Not a spiny species.

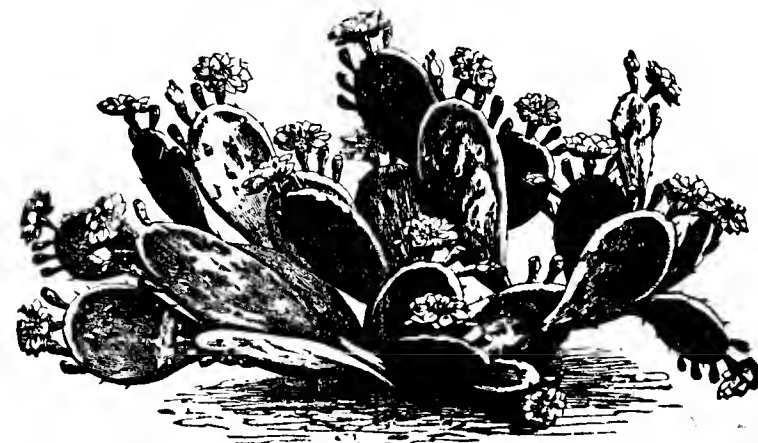


Opuntia scheeri—Mex. West from Victoria, Tamps. A very beautiful species, covered with yellow spines and long hairs.



Opuntia microdasys, Mexico. Among other habitats is found on the high plateau approaching Saitillo from Monterrey.

VOLUME I "THE CACTACEAE" OPUNTIEAE



Opuntia opuntia—Central and eastern U. S. north to Canada. Of wide distribution and showing much variation. Very large yellow flowers.

VOLUME I---"THE CACTACEAE"

OPUNTIEAE

Pereskia pereskia—West Indies, South America. Is the nearest cactus relative to other plant families. Vine-like with leaves, large and flat but fleshy; glochids wanting. It is commonly called the "mother of all cactus", being the most primitive form.

Pereskopsis chapistle—Oaxaca, Morelos, Mexico. Tall growing branching shrubs; branches widely spreading; spines long, white stout; leaves fleshy. Different from *Pereskia* and from *Opuntia*, it is an intermediate form.

Nopalea, represented in collections by some 8 species must next be considered by those interested in the evolution of *Opuntieae*. Four popular species available for collectors—*N. cochenillifera*, *N. auberi*, *N. dejecta*, and *N. inaperta*.

Between *Nopalea* and *Opuntia* come several South American genera not obtainable by the average collector.

OPUNTIA

This genus of 3 Sub-genera namely *Cylindropuntia*, *Tephrocactus* and *Platyopuntia*, has many species and wide distribution from Canada to southern South America. The best known U. S. *Cylindropuntias* are the "chollas" or slender jointed tree cactus of our western desert states.

Opuntia microdasys—Mexico. Joints soft velvety, usually pale green, spineless; areoles conspicuous, closely set, filled with yellow glochids; long a favorite in collections. Species with reddish brown glochids is *Opuntia rufida*.

Opuntia vulgaris (monocantha) variegata—Joints are green blotched with white or yellow. Attractive species in a collection.

Opuntia erinacea—N. W. Arizona, S. Utah, S. Nevada, E. California. Grows in small, low clumps; spines usually white, sometimes brownish, develop into long hairs or bristles, 2-5 inches long.

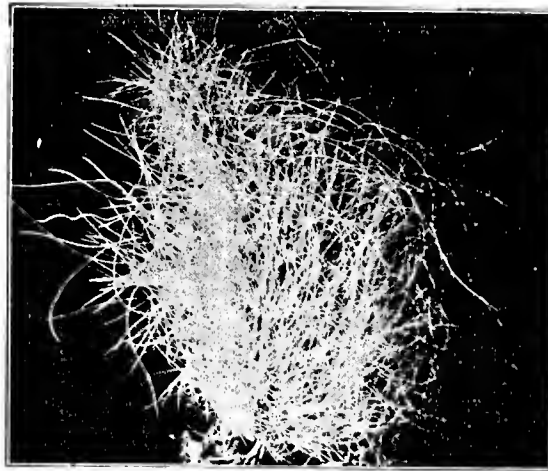
Opuntia polyacantha—From Texas into W. Canada. Low spreading clumps; areoles closely set, all spiny; spines white to brown; flowers lemon yellow; fruit dry. With wide range of forms some may have pink to red flowers. Photograph—C. W. Armstrong, Vancouver, Canada.

Opuntia streptacantha—Deserts of San Luis Potosi and south. Much branched, stout trunk; joints dark green; areoles small, close, spines numerous, white spreading or appressed; glochids reddish brown, short. One of the most important economic opuntias in Mexico, known as "tuna cardona". Photograph by courtesy of Prof. Helia Bravo.

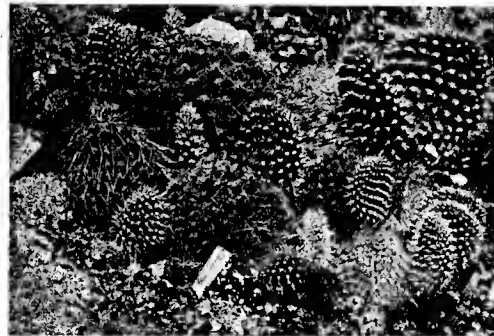
Opuntia brasiliensis—S. America. Of wide distribution. Interesting for its cylindric woody trunk and tree form. Very satisfactory in cultivation.



Opuntia vulgaris variegata
(*monocantha*)



Opuntia erinacea



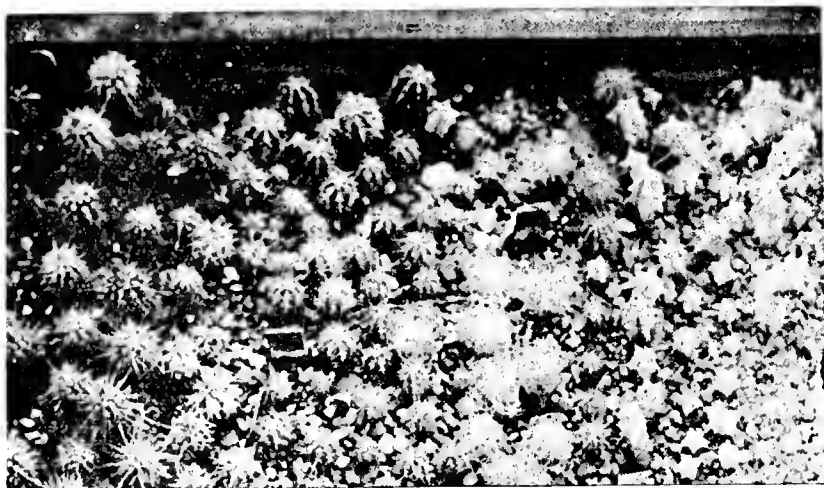
Opuntia polyacantha



Opuntia streptacantha



Opuntia
brasiliensis

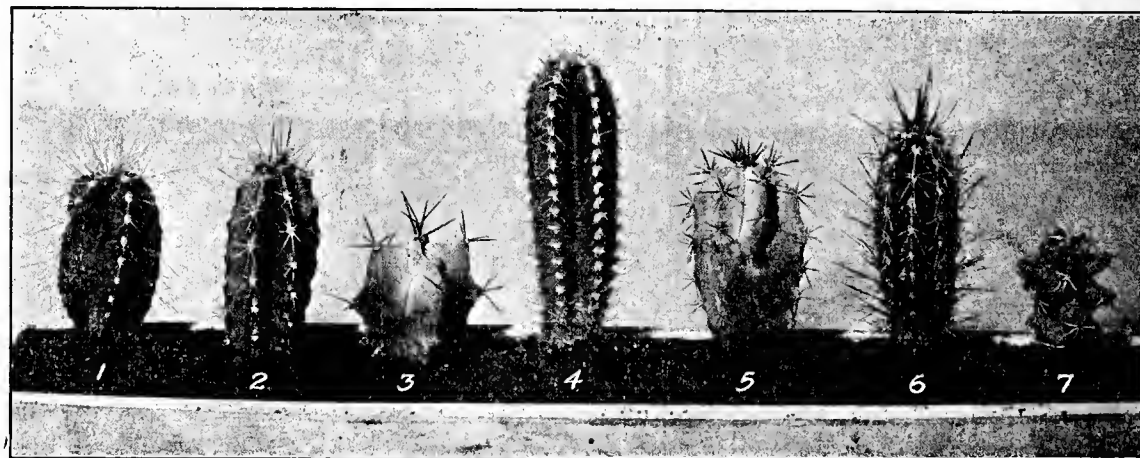


A Flat of Seedlings 6-8 months old. Right center some *Cephalocereus senilis*.

bidding entry of plants from foreign countries have made it impossible for collectors to obtain their different and most desirable species. To obtain these exotic species it has been necessary to raise them from seed. The Shiner Cactus Nursery has taken a leading part in making available to collectors many otherwise unobtainable species.

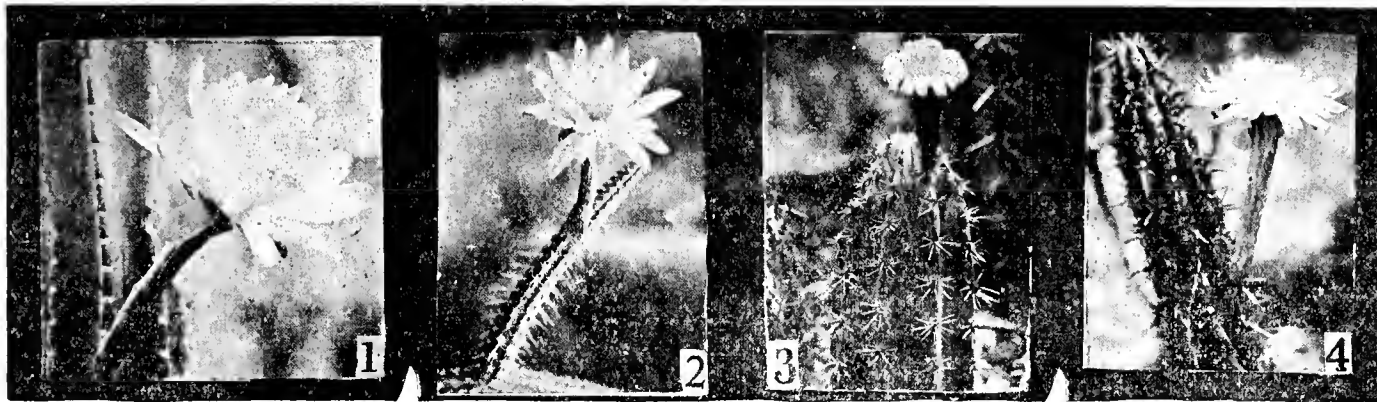
Cactus seedlings are slowly but surely winning their way into favor and general demand. Grown from infancy under conditions similar to those in a home they are much more likely to grow successfully than plants which have been uprooted from western mountains and southern deserts. Seedlings are already acclimated to indoor conditions while mature plants usually find it impossible to adjust themselves to an entirely different environment. Many collectors who have wondered at their lack of success with desert species will see the truth of this explanation. It is also true that collected plants are seldom perfect in form having been subject to extremes of weather and attacks by birds, insects and animals.

African succulents and desert cacti require a soil which is alkaline. A test with 5 cents worth of litmus paper will answer the question. Press paper into wet soil; if it turns pink the soil is acid, if blue it is alkaline.



SEEDLINGS OF MEXICAN SPECIES

- | | | |
|---------------------------------------|-------------------------------------|---------------------------------|
| 1. <i>Lemaireocereus dumortieri</i> . | 3. <i>Lemaireocereus de Mixteca</i> | 6. <i>Lemaireocereus weberi</i> |
| 2. <i>Lemaireocereus stellatus</i> | 4. <i>Pachycereus marginatus</i> | 7. <i>Coryphantha exsudans</i> |
| | 5. <i>Lemaireocereus de Toliman</i> | |

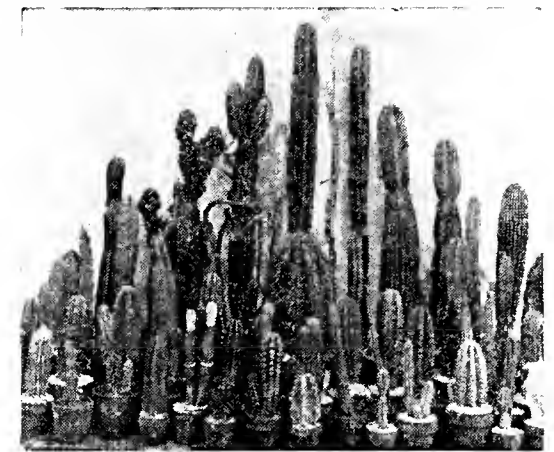


Cereus
stenogonus

Monvillea
cavendishii

Lemaireocereus
pruinosis

Machaerocereus
gummosus



A FINE COLLECTION OF CEREI
The majority of these are rooted cuts



Cephalocereus
senilis



Cephalocereus
Polylophus
Pachycereus grandis in
background



Cephalocereus
cometes

VOLUME II--"THE CACTACEAE" CEREAE

Subtribe I Cereanae of 38 Genera.

There are a sufficient number of the several hundred species of *Cereus* pictured here to show the variety of form, of flowers and habits of growth of this most interesting and worth while Genus. The majority make rapid growth and soon make specimen plants.

Cereus stenogonus—Paraguay—Tree-like, blue to yellow green; ribs 4 or 5, narrow, high; flowers large, white, with outer perianth-segments rose.

Monvillea cavendishii—Brazil to Paraguay—One of best flowering species in cultivation. Good grafted. Medium slender, branching, clambering.

Lemaireocereus pruinosus—Mexico. In flower.

Machaerocereus gummosus—Lower California—Erect or ascending; stout viciously spined like its relative *M. eruca*, the "creeping devil."

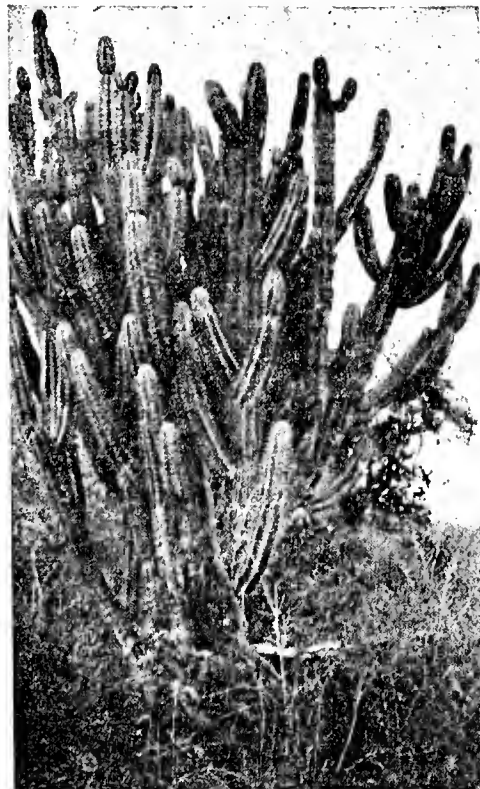
Cephalocereus senilis—S. Mexico. In nature grow to 45 feet. Columnar. One of most famous of Mexican species. White spines are intermixed with long white bristly hairs like an old man's beard, hence the popular name "Old Man of the Mountain". No collection complete without one. Photo—Miss Elzada Clover, University of Michigan.

Cephalocereus polylophus—E. Mexico. Erect, stout growing to 30 ft. A columnar. Areoles bear white felt but no wool. Study is likely to transfer it from *Cephalocereus*. Attractive, many ribbed, good growing sp. New growth at tips of joints, bristly, different, very pretty. Photo—Dr. W. E. Lowry.

Cephalocereus cometes—San Luis Potosi, Mexico. Erect cylindric. Ribs 12 to 15; areoles close, round; spines unequal; flowering areoles bearing masses of yellow hairs or wool, longer than the spines. By some it is thought that *C. cometes* and *C. sartorianus* are but climatic and soil variations of *C. palmeri*. Photo—Dr. W. E. Lowry.



Flowers of *Carnegiea gigantea*



Lemaireocereus pruinosus. Pictured from Pan American Highway, Victoria.



Lemaireocereus pruinosus
Myrtillocactus geometrizans



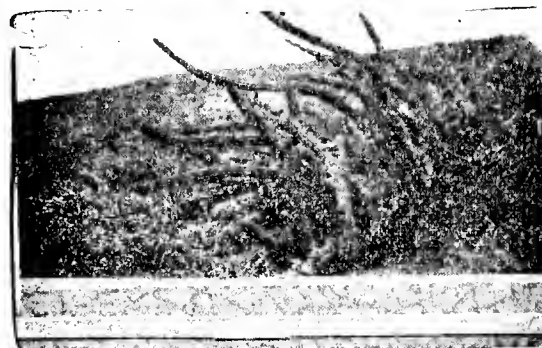
Carnegiea gigantea



Myrtillocactus geometrizans

Right:—

Machaerocereus gummosus
photographed in Baja California.

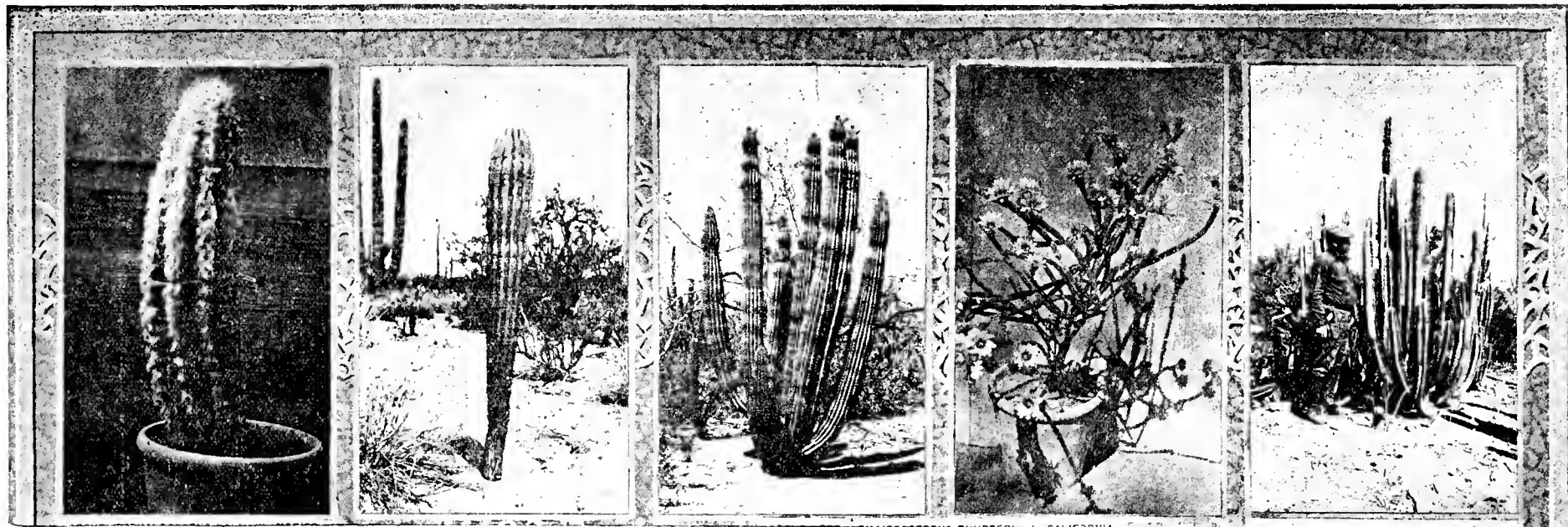


CEREANAE---

Lemaireocereus pruinosus—Victoria, Tamps, Mexico—Tall growing with definite trunk, many branches. Very prominent along Pan American Highway. Rooted cuts flower freely in cultivation. Used for fences. *L. queretaroensis* and *L. griseus* are climatic variations. Fruit good.

Myrtillocactus geometrizans—Central Mexico. Treelike with definite trunk, much branched top; branches bluish green, usually 5 or 6 ribbed. Fruits to be found in all Mexican markets, known as "garambulas". One of species prominent along Pan American Highway.

Carnegiea gigantea—Arizona, S. E. California, Sonora, Mexico. Famed as the largest growing cactus native to the United States. In Mexico and South America there are many species which grow larger and heavier. Stem simple, upright with few lateral branches. Flower white, fruit edible. Reaches height of 30-35 feet.



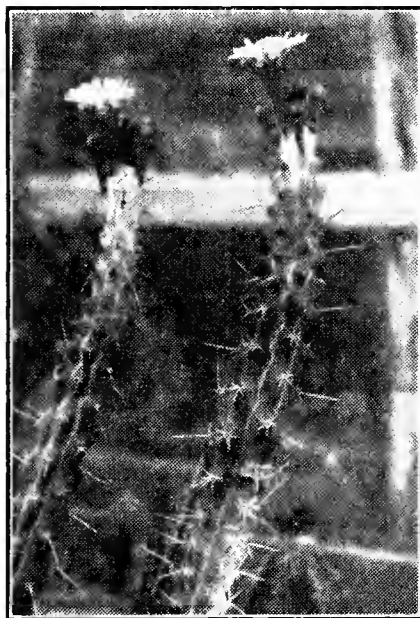
Cephalocereus palmeri

Pachycereus pringlei

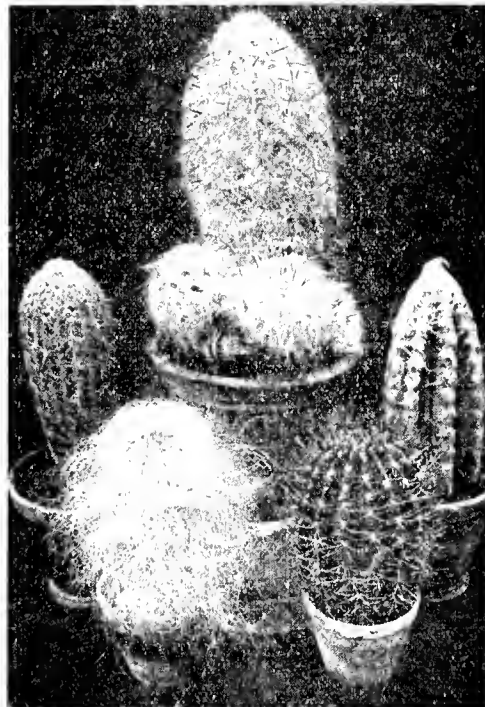
Lemaireocereus thurberi

Wilcoxia poselgeri

Lophocereus schottii



Lemaireocereus beneckeii—(fari-nosus) Central Mexico — With peculiar tuberculate ribs and powdery bloom on growing tips; ribs 8, separated by narrow intervals; areoles small, black felted; flowers. Rare in collections. Seedlings available.



Front row—Cephalocereus senilis—Mexico
Denmoza rhodacantha—S. America.
Back row—Espostoa lanata—S. America.
Oreocereus trollii—S. America
Cephalocereus palmeri—Mexico.

CEREANAE

Cephalocereus palmeri—below Victoria, Tamps, Mexico. To be seen along Pan American Highway, some quite close others with snowy topped branches shining out above the green undergrowth high on the hill sides. Tall, branching, ribs 7-9 or more, rounded, closely set, clothed with long white hairs usually hiding the white spines. Seedlings are golden yellow spined with cream wool.

Pachycereus pringlei—Sonora, Mexico and Lower California—Tree-like, grows to height of 50 feet. Trunk and branches grow thick, heavy, wood-like. Spines formidable in young plants. Seedlings make quick growth. It is the largest growing North American cactus and is of great economic value to native people.

Lemaireocereus thurberi—S. Arizona, Sonora, Lower California—Usually without definite trunk, sending up branches like a "pipe-organ". The delicious fruit is much prized.

Wilcoxia poselgeri—S. Texas, Northern Mexico—Tuberous rooted, slender. Spines inconspicuous, appressed. Flowers rose to purple, beautiful, lasting. Does best grafted.

Lophocereus schottii—S. Arizona, Sonora, Lower California. Usually branches from base, forming large clumps. Ribs usually 5-7. Old flowering branches form long gray bristle-like spines. Sometimes used for fences.

Pachycereus marginatus—Tehuacan, Mexico. Naturalized throughout Mexico but especially prominent in landscapes about Mexico City. Stems usually single. Planted as fences make impenetrable barrier.

Espostoa lanata—Peru—The most precious and beautiful of all cacti. Even small seedlings are covered with soft white hair.

Oreocereus trollii—South America. Long curly white hair, red or yellow central spines.

Denmoza rhodacantha—Mendoza, Argentina—Tall, stout growing columnar like a *Ferocactus*.

CEREANAE

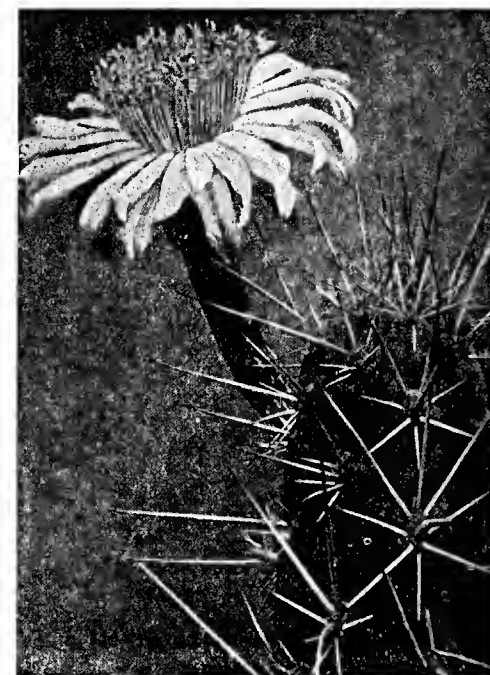
Stetsonia coryne—"Dominant feature of the landscape on the high plains of northern Argentina." Plants grow large and massive but in this country are known only from seedlings.

Acanthocereus pentagonus—Encircles the Gulf of Mexico from Florida to northern South America. Flowers large white, very fine, nocturnal. Recommended very highly as grafting stock especially for delicate species which droop. In Nature forms large colonies. This is a Pan American Highway species.

Harrisia martinii—Argentina. Plant much branched, medium slender, clambering; of vigorous growth, exceptionally fine flowering. Rooted cuts of all *Harrisias* bloom freely in cultivation.

Nyctocereus serpentinus—Mexico. Its real habitat unknown even to diligent collectors but is found in cultivation all over Mexico. Medium slender, erect; flowers large, white, nocturnal.

Harrisia bonplandi—Brazil, Paraguay. Strongly 4 angled; erect growing. Flowers are second in size of all *Harrisias*, the largest being the as yet unnamed introduction by E. O. Orpet.



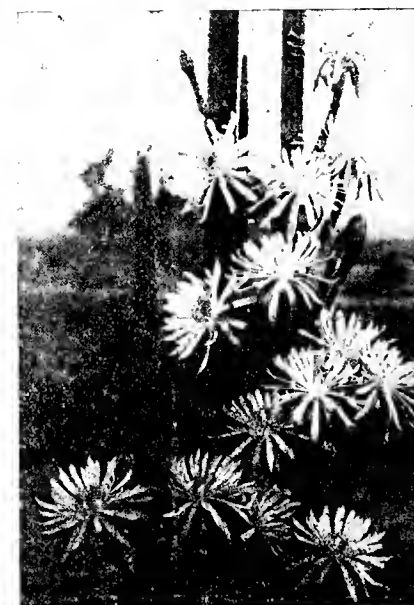
Stetsonia coryne



Acanthocereus pentagonus



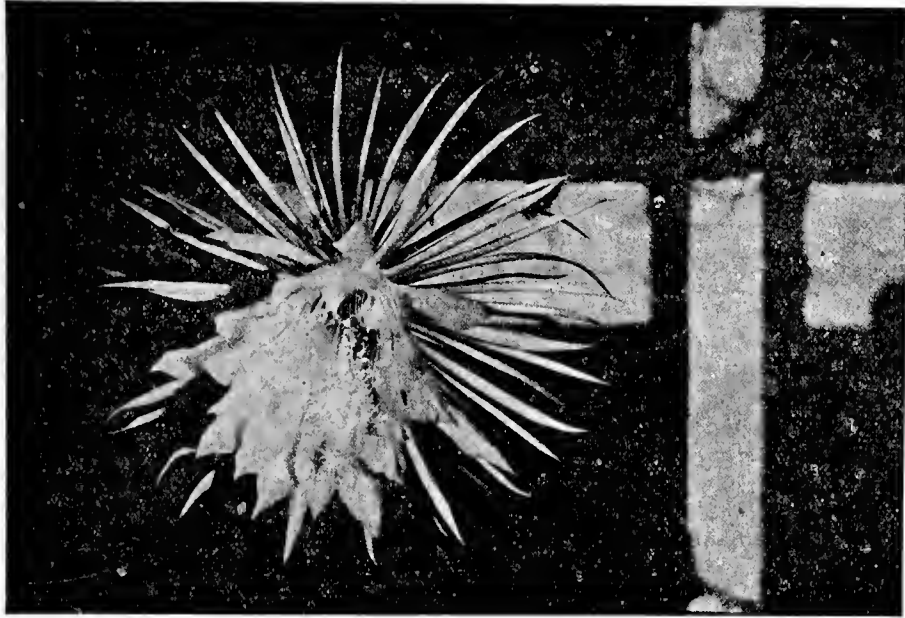
Harrisia martinii



Nyctocereus serpentinus



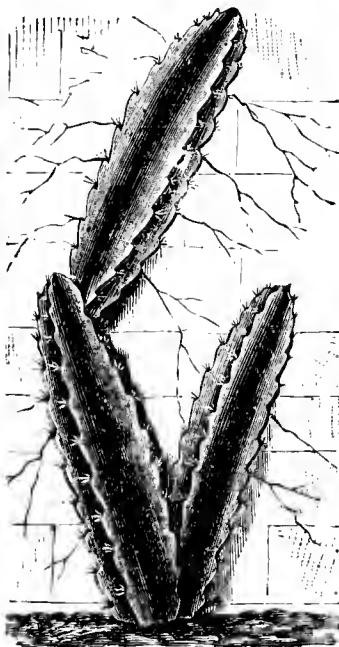
Harrisia bonplandi



Selenicereus vagans



Hylocereus trigonus

Selenicereus pteranthus
(nycticaulis)

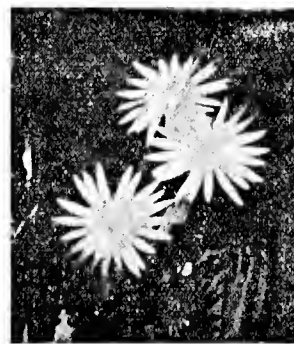
Hylocereus



Acanthocereus pentagonus



Selenicereus macdonaldiae



Hylocereus purpusii

PROPAGATION OF EPIPHYLLUMS

Propagation of Epiphyllums requires a special description as they require a distinctly different culture from Cerei, Neomammillarias and Echinocacti. They require more moisture and a richer soil, and are lovers of shade and warmth. They repay this type of care within a year or two with flowers in a wide variety of colors some of them the largest flowers in the cactus family.

Flowers are described as "gorgeous henna", cerise with magenta throat, rose-pink, deep red, and yellowish white "orange glories", "chrome yellow", etc. The 21 valid species of Britton & Rose are almost all white. The wonderful colors have been developed by hybridizing.

Epiphyllum cuts after being allowed to callous for two or three days may be rooted in slightly moist sand. After being rooted, plant in small pots in a soil mixture of 30 per cent leaf mould, 30 per cent sandy loam, 20 per cent well decomposed cow fertilizer, and 20 per cent of German peat. Pots must have good drainage. Crowding roots in small pot space tends to produce blooms. Do not use lime in soil for Epiphyllums. It is thought by some of the leading growers that the black spots occurring some times are caused by the plant's effort to eliminate lime.

CEREEAE--Subtribe II--Hylocereanae

Hylocereus—Climbing cacti, often epiphytic, stems normally 3 angled or 3 winged. Flowers very large, nocturnal, mostly white, rarely red. 18 or more species native to the tropics. Name means forest-cereus.

Hylocereus trigonus—West Indies—Stems slender, clambering, deep green; joints 3-angled, margins strongly undulate. Flowers large, very fine.

Hylocereus purpusii—Tuxpan, Mexico—Stems bluish, climbing; ribs 3 or 4, margins only slightly undulate; flowers large, outer perianth purplish.

Selenicereus vagans—Western Coast of Mexico—In nature creeps over rocks; ribs about 10; spines short, numerous, brownish yellow; large flower, white with outer perianth brownish.

Selenicereus macdonaldiae—Honduras—Young stems 5 angled with aerial roots, prominent flattened tubercles. Spines few. Flowers very large, fine.

Selenicereus pteranthus (nycticaulis)—Mexico—Slender in cultivation but stout in nature. Stems bluish green to purple, strongly 4 to 6 angled. Flowers very large, fragrant. Good grafting stock.

The **Selenicereus** to be seen climbing through the tops of tall trees along the Pan American Highway, also clambering over rocks in mountain canyons between Monterrey and Victoria, is **S. spinulosus** a fine flowering, most satisfactory species.

ECHINOCEREANAE

Of the 6 genera-Echinocereus, Austrocactus, Rebutia, Chamacereus, Lobivia and Echinopsis—all are S. American except Echinocereus. Echinocereus are found from Wyoming south to the City of Mexico.

E. choloranthus—W. Texas. Small cylindric; reddish brown spines; flowers yellowish green appearing far down on sides of plant.

E. papillosus—S. Texas, Laredo. Clumping, dark green, prominent tubercles; flowers large yellow with reddish center. Miniature clumps are attractive; native of red soils. Two types—miniature and large.

E. pentaloophus—S. Texas, E. Mexico. Procumbent, deep green, ribs undulated. Attractive species, takes kindly to cultivation, recommended for hanging basket. Flower pink with center ivory white.

E. blanckii—S. Texas, Northern Mexico. Joints slender but stouter than average *E. pentaloophus*. Ribs strongly tuberculate. Flower pink with dark center. In nature propagates from underground root.

E. enneacanthus—S. Texas, N. E. Mexico. Cespitose with many stout stems. Flowers large between American Beauty rose and purple. Study would perhaps discover several varieties of this species.

E. fitchii—S. Texas, Laredo. Plants short cylindric, simple or clustered; spines brownish; flowers large, pink to rose. Prized by German dealers as one of the finest flowering of Echinocerei.

E. perbellus—W. and N. W. Texas, New Mexico. Stem clustered or simple. Spines all radials pale brown to reddish or nearly white below. Beautiful species, very large flowers, rose purple.

E. poselgerianus—Northern Mexico between Laredo and Monterrey. Few if any in American collections. Grows from underground root. On plain or hillside likely to grow spiny and slender. In protected canyons almost spineless and 2½ inches or more in diameter. Flower purple.

CACTUS DISPLAY BEDS

Plants in a rightly built cactus bed will make good normal growth, if of flowering sizes should produce blossoms in their season and should continue through the years without loss. With the foregoing standards for judging we have found that the most successful beds are those which are built up entirely on top of the ground.

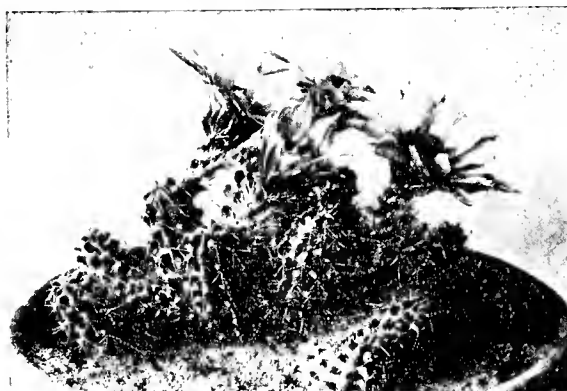
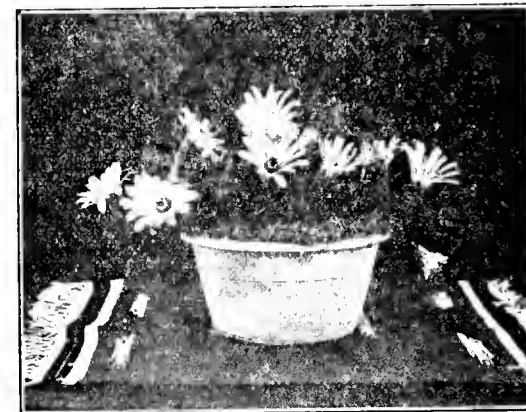
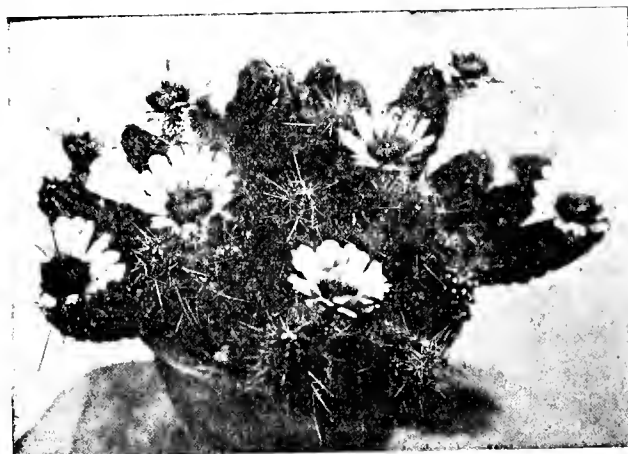
Sustaining walls of rough flag stone are slightly buried, sidewise, following irregular lines around the outside of the bed, and also leading into the center which is considerably elevated. Depending on the depth of the flag stone the bed is then filled in with pebbles, rocks, old cement, broken bricks, etc. to a depth nowhere less than 8 inches, and in the center proportionately higher. Next a covering of sand and gravel to fill in the spaces. Finish with a good cactus planting soil and after plants are in place cover thickly with gravel and rough, worn rocks as they will prevent washing from rains and give the real desert finish and atmosphere.

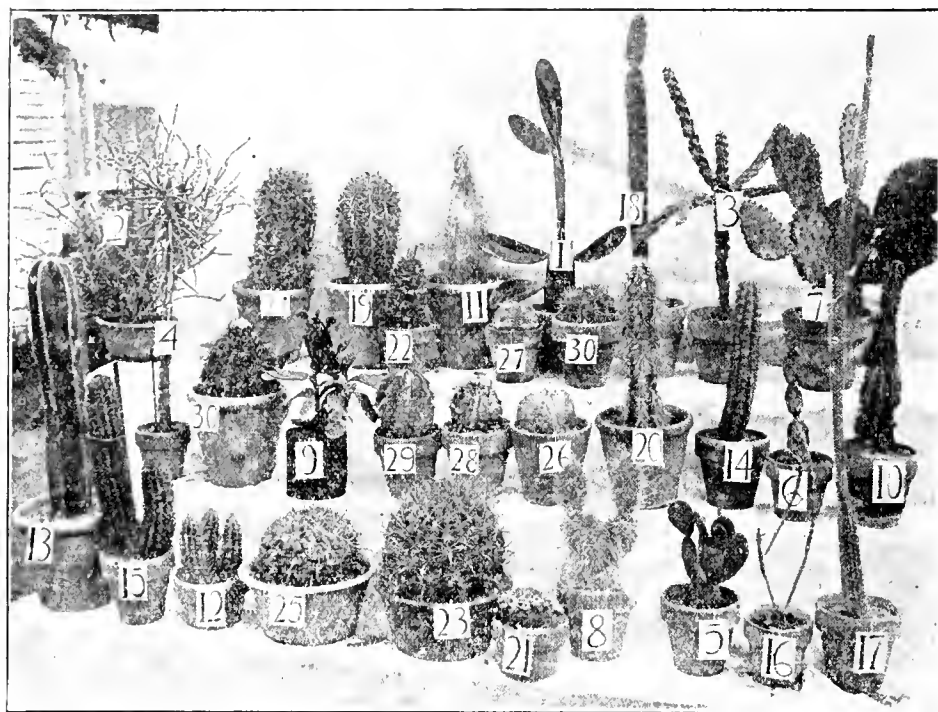
Watering of rock gardens should be decreased in late summer so that plants will begin the winter partially shrunken and in safe condition to withstand cold and moisture. If too plump and succulent they are liable to frost rupture. Rock gardens should be planted in spring and early summer to give plants time to become well rooted.

The hobby of cactus and succulent collecting dates in this country from the Civil War period when cactus societies publishing their own magazines sprang up in Philadelphia and Baltimore. The St. Louis Cactus Association in existence some 35 or more years ago was made up of many members some of whom were outstanding scientists of their generation including Dr. Louis Agassiz, Dr. William Trelease, University of Illinois and a present Chicagoan Dr. Frank Balthis, horticulturist, of Garfield Park Conservatory.

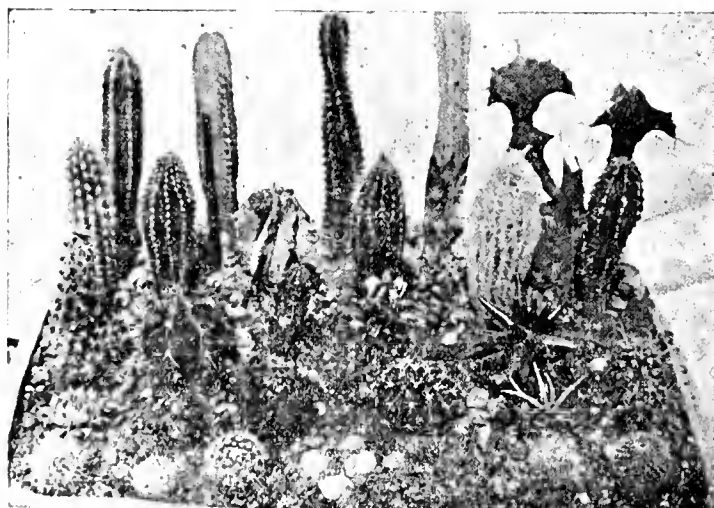
Scientists and propagators of Germany, Belgium, Holland and England have been writing of and developing knowledge of these enthralling plants for over 100 years. Botanists today recognize 125 genera of cacti and about 1500 species. Even the amateur collector is urged to learn the scientific names of his species and thereby avoid confusion.

Volume III--"The Cactaceae"--Cereeae--Subtribe 3. Echinocereanae

*Echinocereus chloranthus**Echinocereus papillosus**Echinocereus pentalophus**Echinocereus enneacanthus**Echinocereus fitchii**Echinocereus blanckii**Echinocereus perbellus**Echinocereus
reichenbachii**Echinocereus poselgerianus*



An Interesting Collection of Many Rare Species



A Flat of Seedlings

An Interesting Collection of Many Rare Species

Group picture—Back Row.

- | | | | |
|----|--|----|--|
| 2 | <i>Opuntia leptocaulis</i> —S. Texas, Mexico. —Bushy, short definite trunk. Crimson fruit during the winter season. A cylindropuntia. | 4 | <i>Opuntia subulata</i> —South America. Simple, erect stem with branches. Cultivated for many years. |
| 24 | <i>Ferocactus hamatacanthus</i> —Laredo, S. Texas, Northern Mexico. — Solitary globular, ribs 13-17 strongly tubercled; 1 hooked central; flowers large, yellow; fruit edible. | 30 | <i>Cactus intortus</i> with small cephalium. |
| 19 | <i>Carnegiea gigantea</i> . | 9 | <i>Opuntia brasiliensis</i> —a small plant. |
| 22 | <i>Hamatocactus setispinus</i> . | 29 | <i>Astrophytum ornatum</i> . |
| 11 | <i>Cephalocereus senilis</i> . | 28 | <i>Astrophytum capricorne</i> . |
| 27 | <i>Astrophytum asterias</i> . | 26 | <i>Astrophytum myriostigma</i> . |
| 1 | <i>Nopalea cochenillifera</i> —Jamaica, Tropical America. A most satisfactory, spineless, quick growing, free flowering species. Flowers pinkish red. | 20 | <i>Lophocereus schottii</i> —a gray, bristly flowering branch. |
| 30 | <i>Cactus intortus</i> . | 14 | <i>Lemaireocereus hystrix</i> —West Indies. Grows tree-like, gray blue. |
| 18 | <i>Acanthocereus pentagonus</i> . | 6 | <i>Opuntia vulgaris</i> (monocantha) variegata. |
| 3 | <i>Opuntia imbricata</i> —Colo. to S. Mexico. Treelike, hardy, red flowers. A cylindropuntia. | 10 | <i>Cereus peruvianus</i> . |
| 7 | <i>Opuntia lindheimeri</i> —Laredo, S. Texas. Platycypuntia. Flowers red or yellow. | 13 | <i>Pachycereus marginatus</i> —an unusually fine, stout rooted cut. |
| | | 15 | <i>Lemaireocereus thurberi</i> . |
| | | 12 | <i>Cephalocereus royeri</i> —small but woolly rooted cuts. West Indies. Body dark, yellow spines, gray wool. |
| | | 25 | <i>Homalocephala texensis</i> . |
| | | 23 | <i>Ferocactus wislizenii</i> . |
| | | 21 | <i>Ariocarpus fissuratus</i> . |
| | | 8 | <i>Opuntia erinacea</i> . |
| | | 5 | <i>Opuntia microdasys</i> . |
| | | 16 | <i>Wilcoxia poselgeri</i> . |
| | | 17 | <i>Nyctocereus serpentinus</i> . |

A FLAT OF SEEDLINGS

Row 1—Left to Right.

Echinomastus madowellii, *Neomammillaria oliviae*, *N. parkinsonii*, *N. herrerae*, *N. camptotricha*, *N. bocasana*, *N. hahniana*.

Row 2.—

Obregonia denegri, *Echinofossulocactus multicostatus*, *N. schiedeana*, *Cactus maxonii*, *Leuchtenbergia principis*, *Ferocactus horridus*.

Row 3.—

Echinocereus blanckii, *Trichocereus*, *Echinocereus poselgerianus*, *Lemaireocereus beneckeii*, *Dolichothele longimamma*, *Carnegiea gigantea*.

Row 4.—

Cephalocereus gounellii, *C. polylophus*, *Astrophytum ornatum*, *C. chysacanthus*, *Euphorbia lanata*, *C. euphorbioides*.

Row 5.—

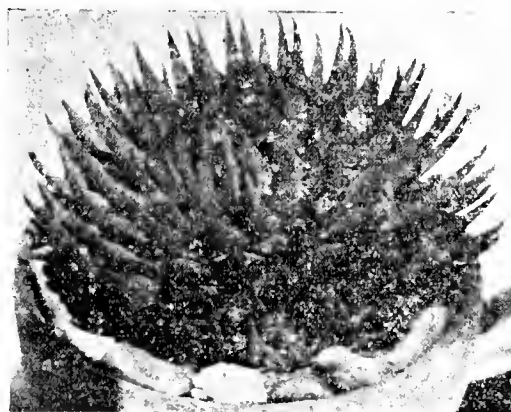
Cephalocereus sp. Mexico, *Cereus inermis*, *Echinocereus scheeri*, *Myrtillocactus geometrizans*, *Euphorbia grandicornis*. (Plant).



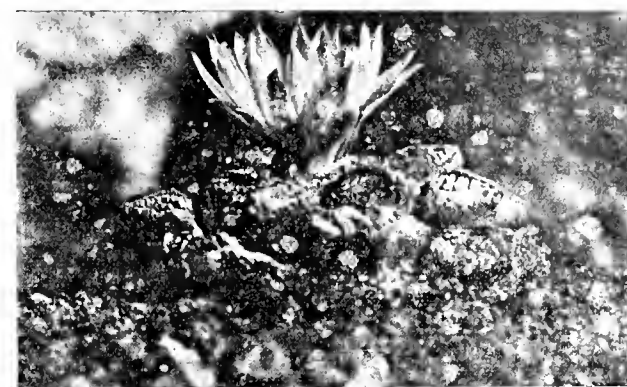
Echinopsis eyriesii



Echinopsis of columnar type.
Members of *Echinoceraeae*.



Ariocarpus trigonus.
An exceptionally handsome specimen.



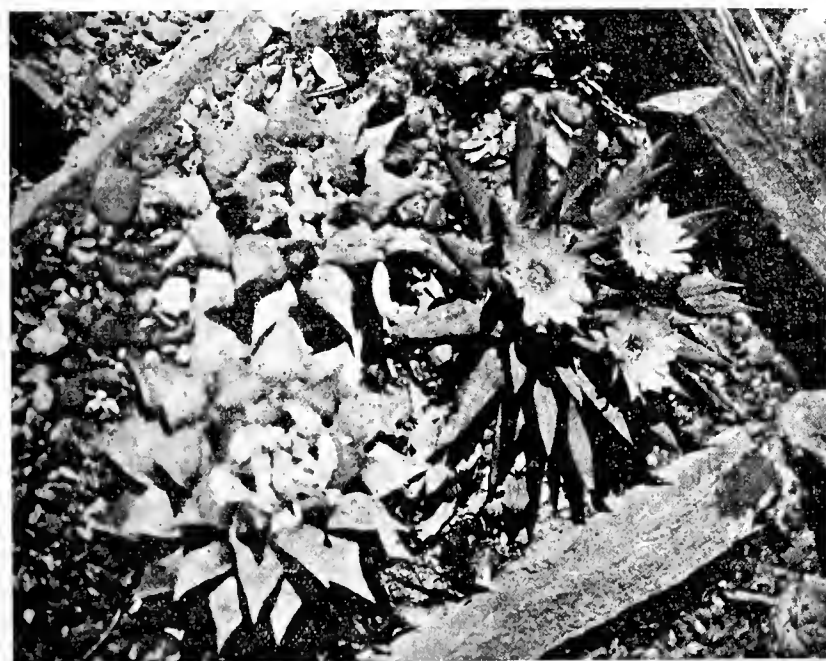
Ariocarpus fissuratus—growing almost flat as in Nature.



Ariocarpus fissuratus taller
globular in cultivation



Aztekium ritteri—a very rare Mexican species.



Upper—*Ariocarpus furfuraceus*. At right in flower—*A. trigonus*.
Lower—*Ariocarpus retusus*.

Echinopsis—All South American. Some grow very tall, others remain globular. All have very beautiful flowers ranging from white to yellow and pink, growing on long, hairy tubes.

Echinopsis cyriesii—S. Brazil, Uruguay. Globular, simple or clustered. Large white flower.

SUBTRIBE IV. ECHINOCACTANAE of 28 Genera

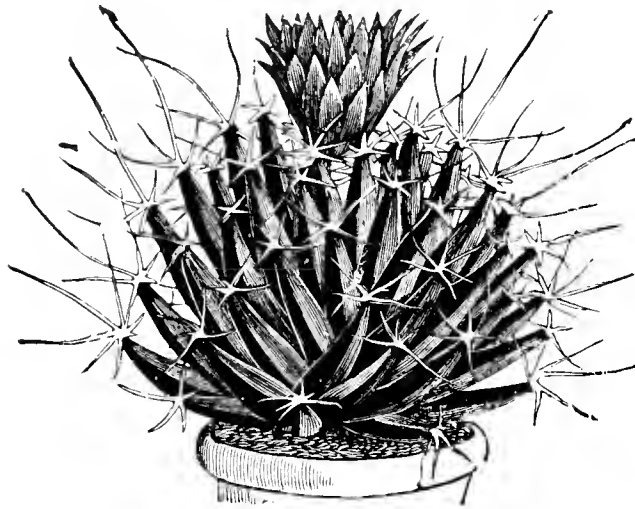
Ariocarpus trigonus—Central and Western Tamaulipas. Grows on slate hillsides, almost buried. Much trampled by goats. Very rare in collections. Flower yellow.

Ariocarpus fissuratus—S. W. Texas, N. W. Coahuila, Mexico. Plant flat or somewhat rounded; tubercles imbricated with surfaces more or less fissured and irregularly warty. Flowers in Fall, pink. Perfectly named the "Living Rock".

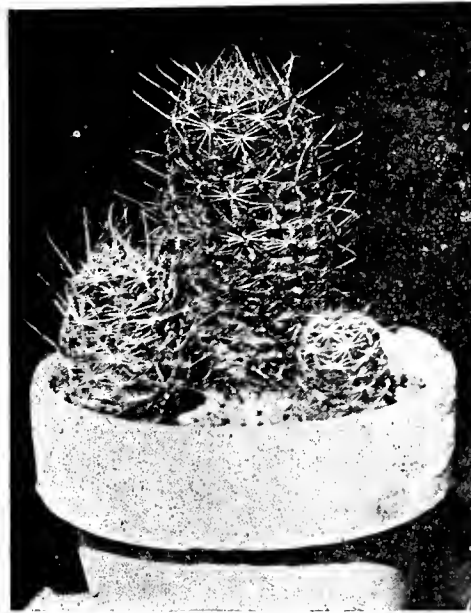
Ariocarpus furfuraceus—Western Coahuila. Tubercles more rounded, rougher with a woolly areole near the tip. Flower white.

Ariocarpus retusus—San Luis Potosi. Plants globular, very woolly at the center; tubercles horny, 3 angled, flat. Flower white.

Aztekium ritteri—Nuevo Leon, Mexico. A monotypic. Found as small plant or clusters 3-5 heads. Seldom over 2 inches in diameter. Flattened depressed center; 8-13 ribs; woolly center; areoles very approximate. Flower small, white with pinkish median stripe. Very rare in collections.



Leuchtenbergia principis

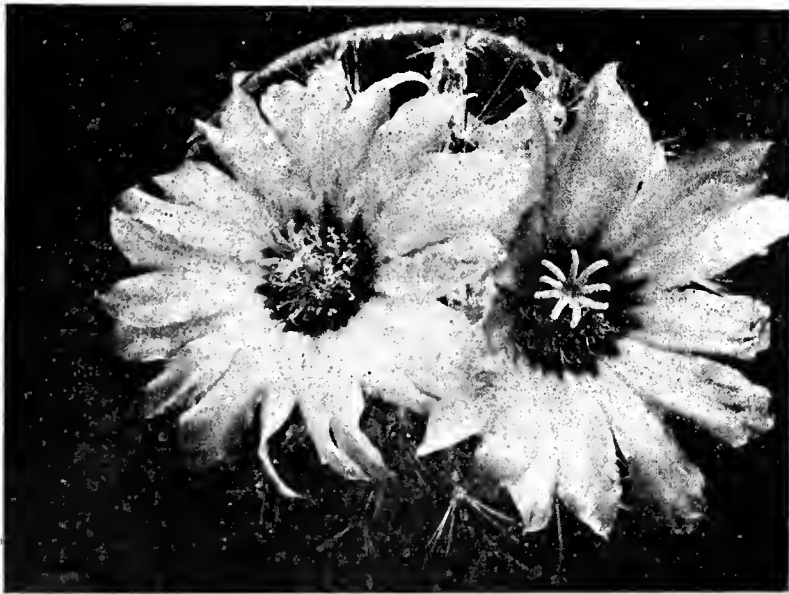


Hamatocactus setispinus

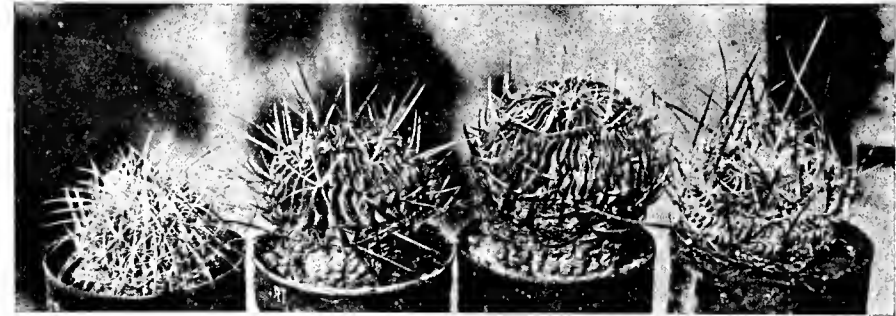


Back row: *Cephalocereus hoppenstedtii*, *Peresklopsis chapistle*, *Leuchtenbergia principis*, *Pachycereus marginatus*.

Front row: *Echinocereus luteus*, *Echinocereus knippelianus* (graft), *Thelocactus bicolor* var *schottii*, *Coryphantha cornifera*.



Flower of *Hamatocactus setispinus*
S. Texas native species.



Four members of *Echinofossulocactus*
1. *E. albatius*. 2. *E. lancifer*. 3. *E. heteracanthus*. 4. *E. multicostatus*.

ECHINOCACTANAE

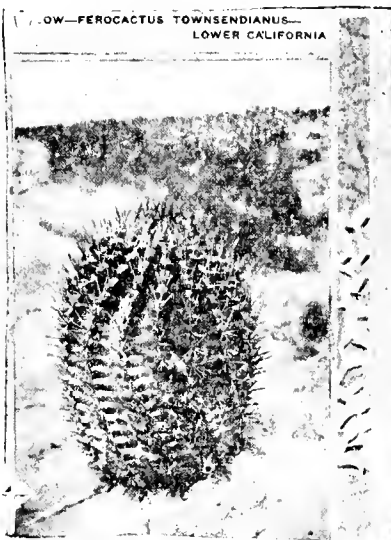
Leuchtenbergia principis—Central to Northern Mexico. Very unlike all other cacti. Has elongated, angled tubercles; thin papery spines. From inaccessible sections. Rare in collections. Seedlings odd miniatures of parent plants.

Hamatocactus setispinus—S. Texas, North Mexico. Yellow spines, hooked central. Yellow flower with red center. Two or more varieties. Good in cultivation.

Echinofossulocactus—Mexico. Of some 30 or more recognized species. Rather small plants, usually depressed globulars. Ribs numerous, in some 50 to 100, thin, wavy. Intricate spine designs make genus most interesting.



Ferocactus pringlei—Mexico



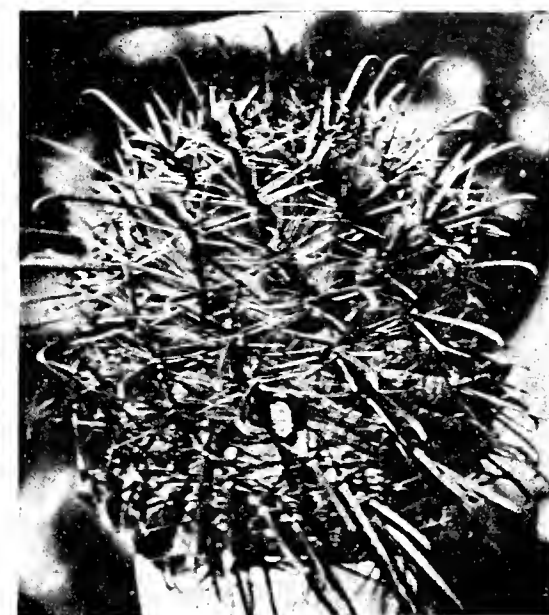
Ferocactus townsendianus—Gulf of Calif. Short cylindric, ribs about 16, often spiraled. Seedlings.



Ferocactus wislizeni, 9 feet high



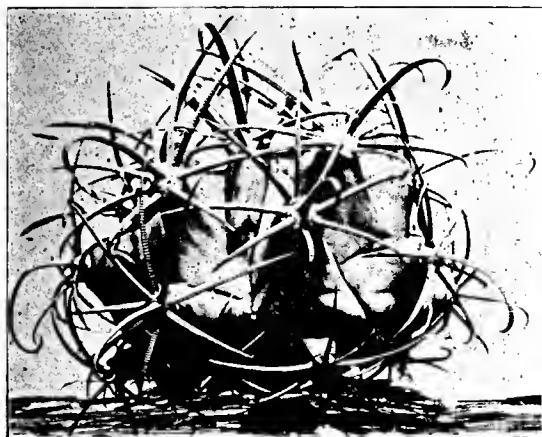
Ferocactus lecontei



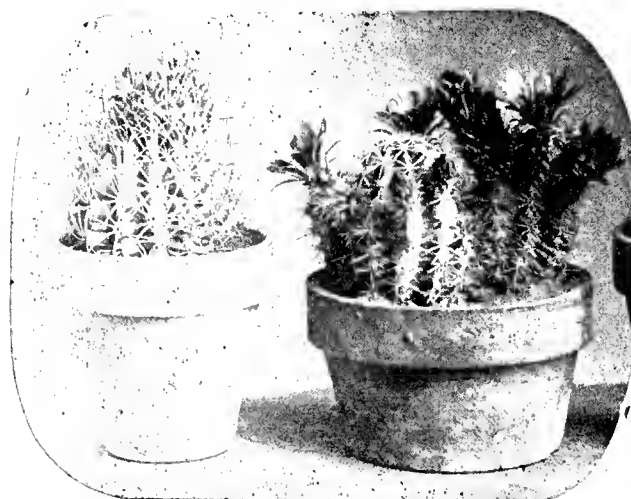
Ferocactus horridus

Sonora, Sinaloa, Baja California. Globular form, ribs always 13, not tubercled. One central spine much elongated, flattened, strongly hooked. Most formidably armed of this genus. Flower yellow. Seedlings available.

ECHINOCACTANAE

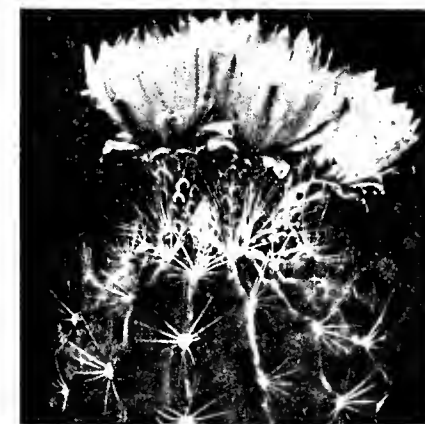


Ferocactus covillei

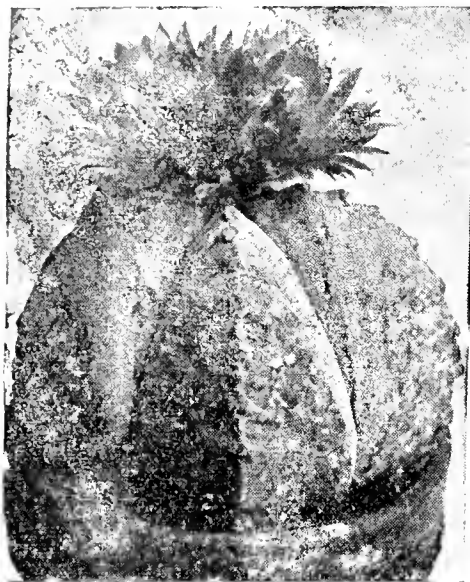
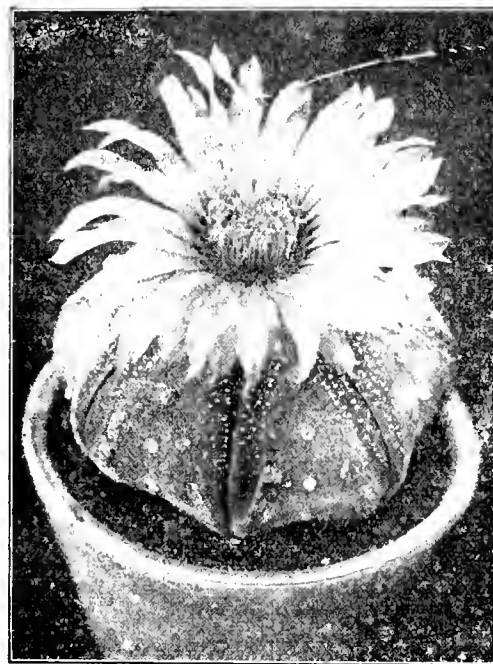
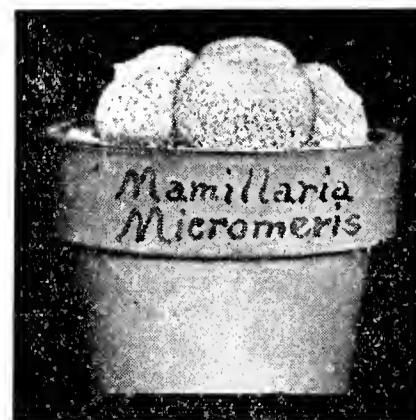
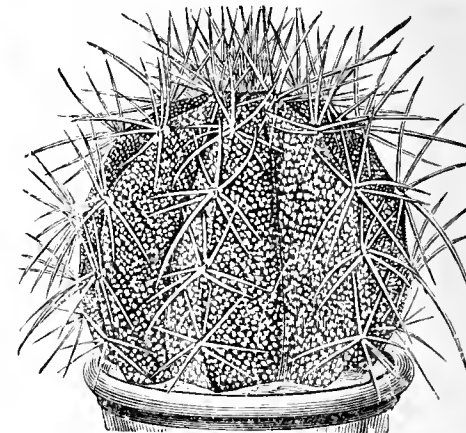


Ferocactus uncinatus

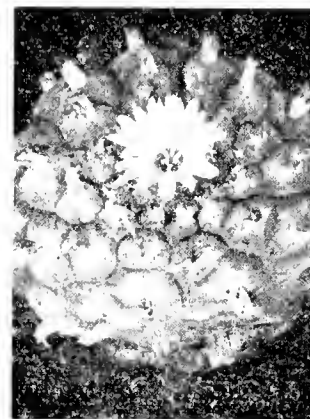
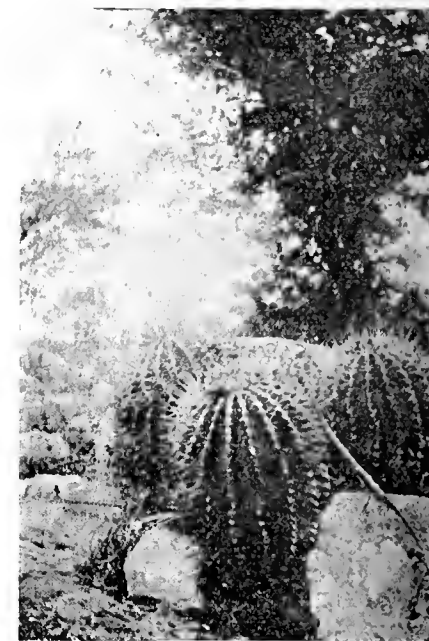
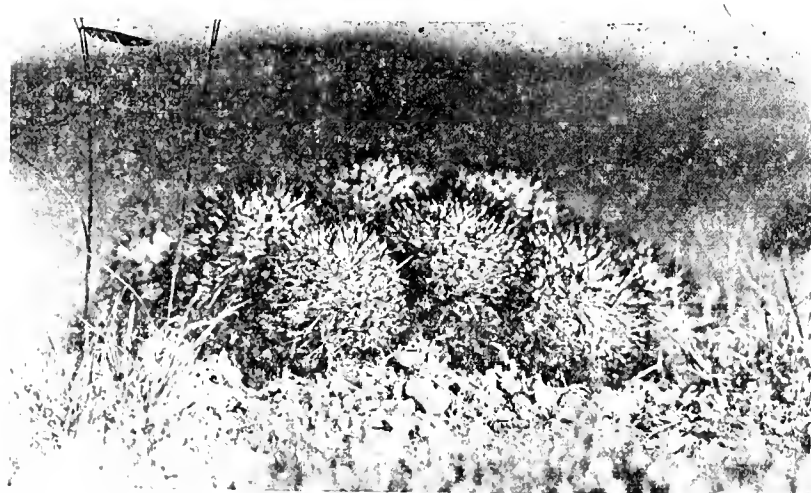
Echinocereus triglochidiatus



Ferocactus hamatacanthus. Northern Mexico, S. Texas. Solitary globular, ribs 13-17, strongly tubercled. One hooked central. Flowers large, yellow. Fruit edible. Because of its fruit, soft body, more delicate spines this species may not belong under *Ferocactus*. A Laredo native.

*Astrophytum myrtilloides**Astrophytum asterias**Epithelantha micromeris**Astrophytum ornatum**Astrophytum capricorne*

SUBTRIBE 4. ECHINOCACTANAE

*Lophophora williamsii**Ferocactus rafaellensis*. Pictured in Nature, on a mountain top, west of Victoria.*Pediocactus simpsonii*

Lophophora williamsii—S. Texas to Central Mexico. Plants flattened, globular. Flowers pink. Dried and known as "mescal buttons" this sp. has been used by N. A. Indians in religious ceremonies for hundreds of years.

L. lewinii is a good species, from Southern Mexico, more blue green while *L. williamsii* is gray green.

Epithelantha micromeris—W. Texas, Northern Mexico. Plants miniature globulars with depressed centers. Spines white, fine, appressed. Flower pink.

Pediocactus simpsonii—Colorado north to Montana. Globular. Spines reddish brown with white bases. Flowers pink in a circle around the center, open for several days.

ASTROPHYTUM-STAR PLANT

Astrophytum myriostigma—Northern, North Central Mexico—This is the well known "Bishop's Mitre", globular to cylindric, spineless, 4 to 9 ribs, very broad, acute, usually covered with white woolly scales.

var. *coahuilensis*—Found in Coahuila, so thickly covered with white felted dots that the color of the plant body is completely hidden. In age this sp. tends to become columnar, up to 18 ins. Flower is yellow with red center and the fruit dehisces through a basal pore.

var. *potosina*—Of the state of San Luis Potosi. Is less thickly covered with white dots. Usually of greater diameter than height. Has a yellow flower without red center and the fruit dehisces through four or five splits in the upper half forming a cup resembling the calyx of a flower with 4 or 5 sepals.

var. *tamaulipensis*—from Tamaulipas. Is intermediate between the 2 sp. just described. It is less thickly covered with white dots than var. *coahuilensis* but resembles it more in shape. The flower lacks the red center of *coahuilensis*. Dehiscence is similar to var. *potosina* but the plant body is never as squat. This is the most symmetrical in form of all the *myriostigmas*.

var. *columnaris*—from the border line of S. Tamaulipas and San Luis Potosi is a taller and slenderer species with 7-9 ribs. The flower is small, of paler yellow than other species. Fruit dehisces as does that of var. *potosina* and var. *tamaulipensis*.

var. *quadricostata*—Four ribbed member of any of the first 3 species.

var. *nuda*—is apparently var. *potosina*, for some reason lacking partly or entirely the characteristic white dotting. In cultivation it soon becomes indistinguishable from it.

Note: In age all of these species tend to develop excess ribs.

Astrophytum asterias—Mexico and in Texas in a limited area in Lower valley of the Rio Grande, but becoming very scarce. In nature low growing, depressed. In cultivation more rounded, globular. Ribs 8, low, with prominent, circular, felted areoles down the center of each rib. Good descriptive name, the "Sea Urchin". Flower large, yellow, with red center. Dehisces through basal pore.

Astrophytum capricorne—North Central Mexico. Short cylindric. Ribs 7 or 8, high, acute; spines several; flowers large, reddish without to lemon yellow within. Found on hills of lime formation. Varieties *crassispinus*, *senilis* and *aureus*. Dehisce through basal pore.

Astrophytum ornatum—Central Mexico. Subglobose to cylindric surface usually quite white floccose. Ribs 8, prominent, acute, often curled; spines prominent, stout; flowers large, yellow. An artistic

species, even seedlings very attractive. Fruit dehisces through slits in the upper half.

var. *mirbelli* grows to a large plant, 3 feet in height.

SUCCESSFUL PROPAGATION OF CACTI

Propagation by cuttings is one of the most popular and successful forms of cactus propagation. Make a clean cut and allow cutting to callous over before planting. This takes 2 or 3 days for thin species and 4 or 5 for stout types. One can obtain specimen plants very much quicker from cuts than by raising the same species from seed.

Many propagators advocate rooting of cuttings in absolutely dry clean, sharp sand. It is surprising how soon small roots begin to form. When a nest of roots has formed transplant to regular planting soil.

During late Fall and Winter we have done much successful rooting of both cuts and plants by planting them in dry soil in a fairly cool place and leaving them without watering until Spring. At this season the majority of cacti growing outside are dormant. This is their resting period after which they bloom more freely in the Spring. Plants kept in the home under ordinary living room temperatures do not become dormant as they do in nature.

SOIL.

Looseness of soil for both cacti and succulents is very advisable. Considering soil variations over the country it is impossible to give an exact soil formula. Then too different plant families require soils of varying richness. A good average mixture, however, may be made of one-third each of good garden leaf, well rooted leaf mold and clean, sharp, coarse sand,---mixed and sifted. To this should be added a small amount of ground old mortar as the majority of cacti require it. Ground charcoal is excellent in soil mixtures intended for pots, not for what it does but for what it may prevent. Cerei, Neomammillarias, many Echinocerei take a richer soil than the above. They are found in Mexico growing in richest leaf mold.

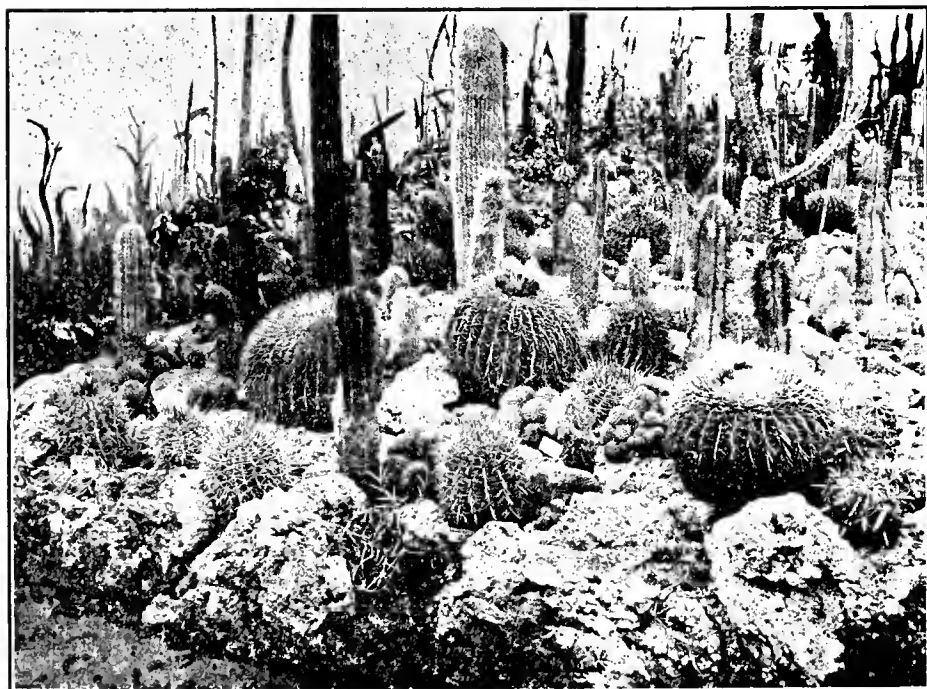
Sand is used in aerating the soil and for quick drainage of water away from the roots, two essentials in successful cactus gardening.

WATER.

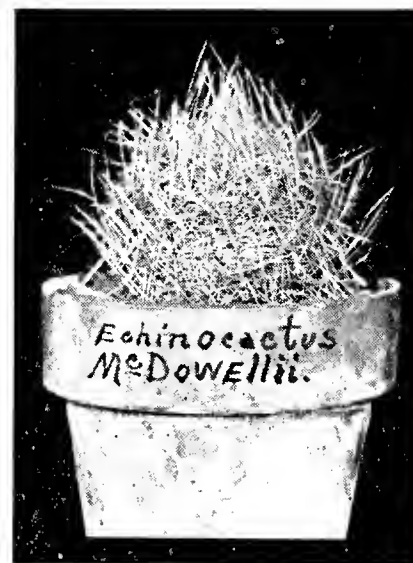
Rainwater is always preferable to most hydrant water for plants. Many valuable life giving properties from the air are incorporated in all rain water and are made available to plants because of being in solution. The soil about rooted plants should not be allowed to become or remain absolutely dry for any length of time as this causes the minute hair or feeder roots to die. Newly put out plants should be watered very sparingly for several weeks or until their root systems have gone to work again.



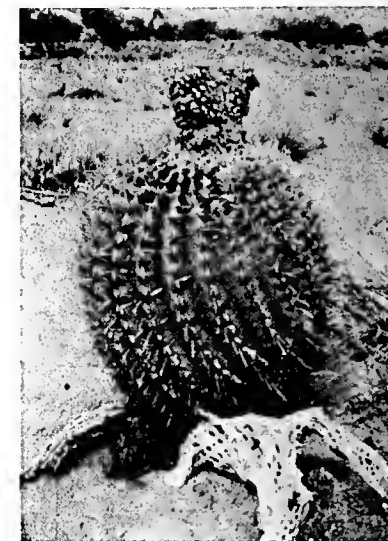
Palm leaf shaded cactus bed. Three large plants are *Ferocactus pringlei*



A handsome rockery of rare plants



Echinomastus maddockii



Ferocactus lecontei

ECHINOCACTANAE

Ferocactus pringlei—Mountains of Coahuila, Zacatecas, Mexico. In nature grows into giant clumps with individual plants 2 feet in thickness and 10-12 feet high. Spines red; areoles with conspicuous white hairs. Most colorful on mountain side.

F. wislizenii—New Mexico, Arizona, Mexico, W. Texas. Usually simple, sometimes to height of 9 feet. Ribs numerous, often 45, with hair-like radial spines on mature plants. Flower, fruit, yellow. "Barrel."

F. lecontei—S. California, W. Arizona. Small plants globular, most colorful, larger ones tall, stout, cylindric. Sometimes called "Mexican fire-ball."

F. covillei—S. Arizona, Sonora, Mexico. Attractive seedlings. Grow to large, tall plants. Flower yellow, tipped with red.

F. uncinatus—W. Texas, Central Mexico. Short cylindric, bluish, ribs strongly tubercled. Flower reddish brown. Possibly does not belong under *Ferocactus*.

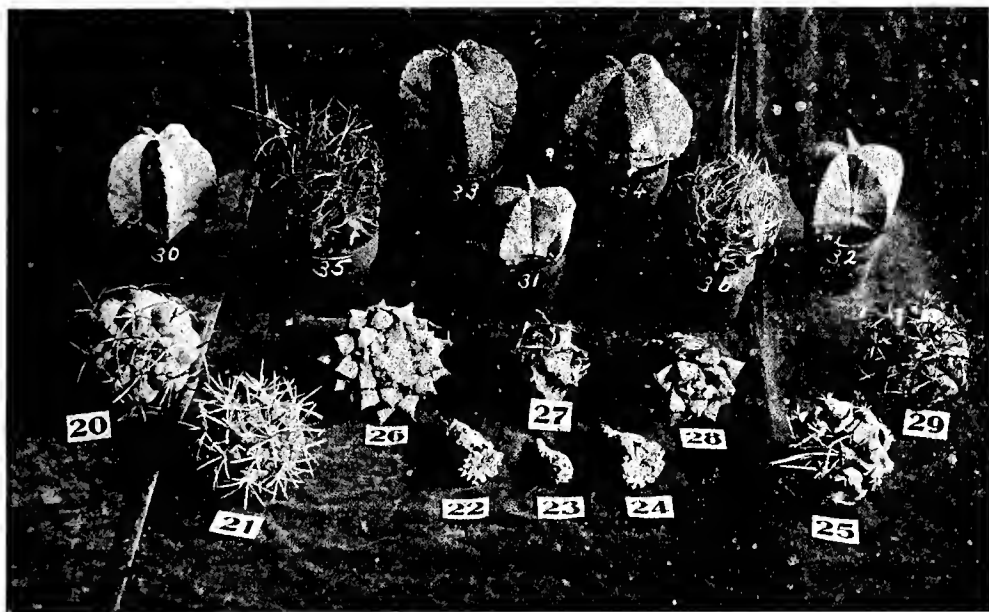
Echinocereus triglochidiatus—probably variety *paucispinus*. Central West Texas. Earliest flowering, flowers scarlet. "Claret cup."

Ferocactus rafaelsensis—Victoria, Tamps, Mexico. A little known species, bright green, closely resembles *F. flavovirens* in color of yellow spines but does not cluster with as many heads. Flower yellow, not large. Plants grow to 6-8 feet but always prostrate. Illustrated page 22.

Ferocactus lecontei, Arizona, growing in the desert, showing an abnormal growth.

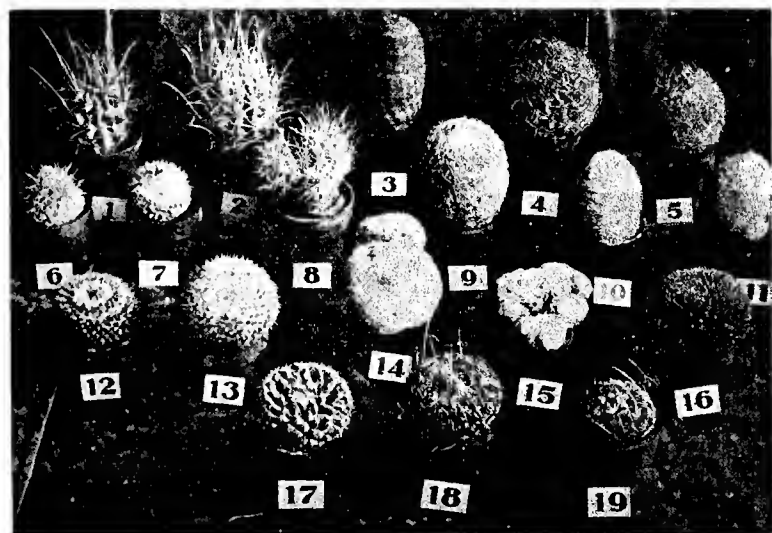
Large round plants in the fourth picture are *Echinocactus grusonii*, Mexico. Majority of the others are cerei including in the center back an unusually fine *Cephalocereus senilis*.

Echinomastus maddockii—Mexico. Simple globular covered with a mass of interlocking white spines. Flowers rose.

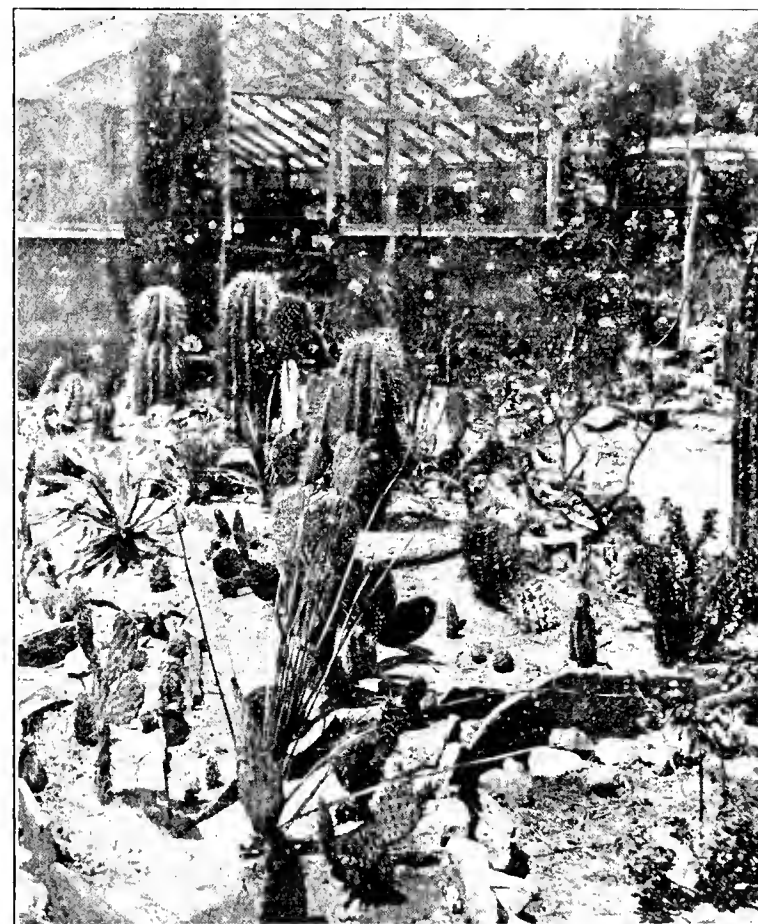


These two collections of Mexican species are owned and photographed by a Canadian fancier, C. W. Armstrong. Plant photography is just one of the advanced degrees of enthusiasm through which members of the cactus fraternity pass in enjoyment of their hobby.

- | | |
|---|---|
| 20 <i>Thelocactus fossulatus</i> | 26, 28 <i>Ariocarpus retusus</i> |
| 21 <i>Coryphantha muehlenpfordtii</i> | 27 <i>Astrophytum capricorne</i> |
| 22, 23, 24 <i>Ariocarpus kotschubeyanus</i> | 29 <i>Echinocactus horizonthalonius</i> |
| 25 <i>Thelocactus nidulans</i> | 30-33 <i>Astrophytum myriostigma</i> |
| | 35, 36 <i>Astrophytum capricorne</i> |

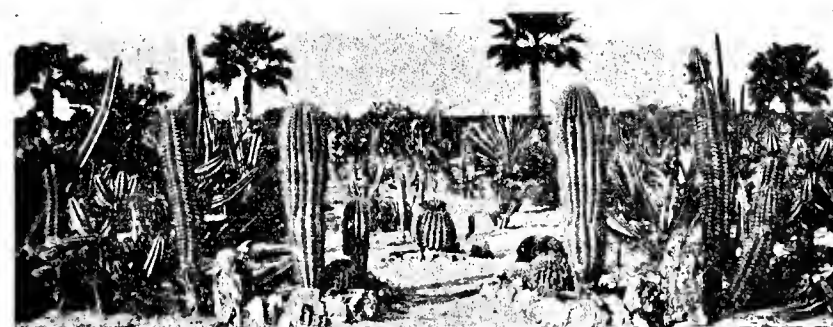


- | |
|--|
| 1, 2 <i>Ferocactus uncinatus</i> |
| 3 <i>Echinocereus rigidissimus</i> |
| 4, 5 <i>Echinomastus unguispinus</i> |
| 6 <i>Coryphantha radians</i> |
| 8 <i>Thelocactus rhodophthalmus</i> |
| 9, 11 <i>Neolloydia beguinii</i> |
| 10 <i>Echinomastus krausei</i> |
| 12 <i>Neomam. chionocephala</i> |
| 13 <i>Neomam. waltherii</i> |
| 14 <i>Neomam. candida</i> |
| 15 <i>Neomam. lenta</i> |
| 16 <i>Neomam. purpusii</i> |
| 18, 19 <i>Echinofossulocactus zacatecensis</i> |

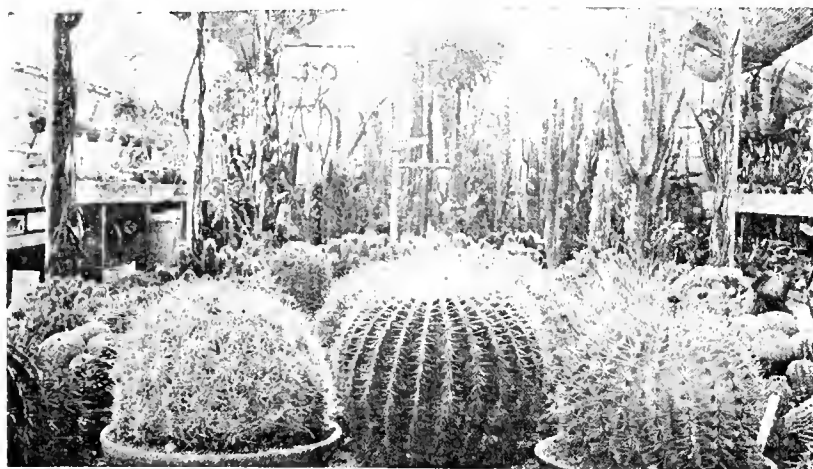


FIRST STEPS IN BUILDING A DISPLAY BED.

This picture was taken too soon after planting but serves to show the use of outside irregular lines. By using lines of thin rocks buried in the soil various levels may be maintained.



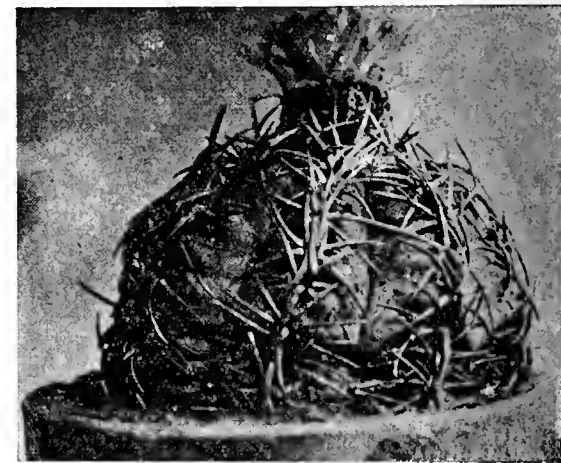
A cactus garden in the lower Rio Grande Valley—J. R. Pirtle



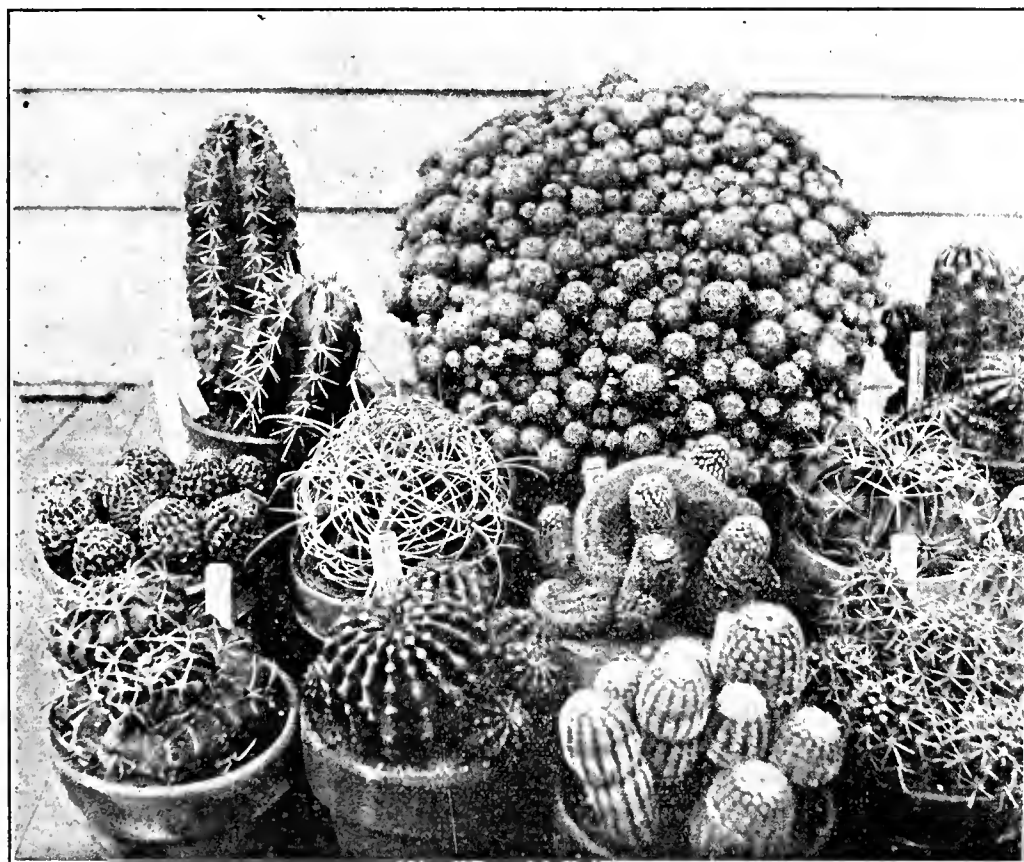
Section of cactus greenhouse of Howard O. Bullard, Hackensack, N. J. housing one of the largest private collections in the U. S. Mr. Bullard has contributed many interesting species to the Bronx Botanical Gardens.



Cactus intortus



Echinocactus horizonthalonius



A group picture from collection of the late J. H. Callender, Peterboro, Ont. Canada.

The three splendid specimen plants shown in the greenhouse picture at upper left are *Neomammillaria compressa*, *Echinocactus grusonii* and *Ferocactus emoryi*.

Echinocactus grusonii—Hidalgo, Mexico. Plants usually single, depressed, globose, light green with golden yellow spines. Grow very large, 20-25 inches in diameter. Very attractive species, outstanding in any collection.

Echinocactus horizonthalonius—W. Texas, Northern Mexico. Simple globular, ribs usually 8; spines very stout. Flowers pink to rose. Needs perfect drainage, old lime in its soil and little water.

In the group picture below the very large clump at the back is *Neomammillaria multiceps*, allowed to grow many years without being disturbed.

First plant in the middle row is *Echinocereus viridilorus* widely distributed from W. Texas to Wyoming and S. Dakota, variable in habit and spines but always green flowered.

Second plant appears to be *Ferocactus lecontei*.

Third an *Echinocereus cristatus*.

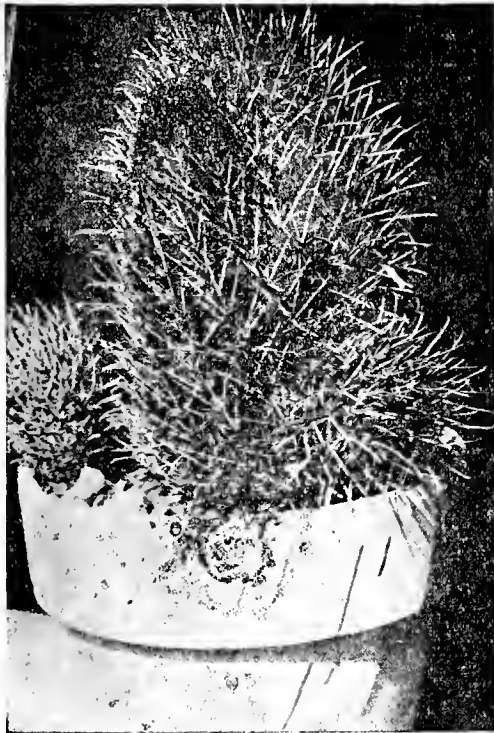
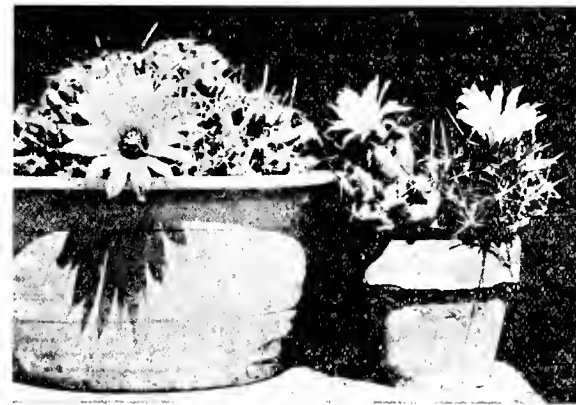
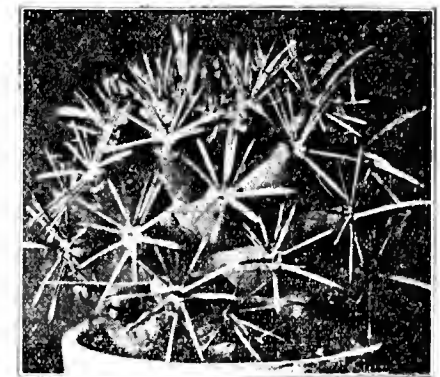
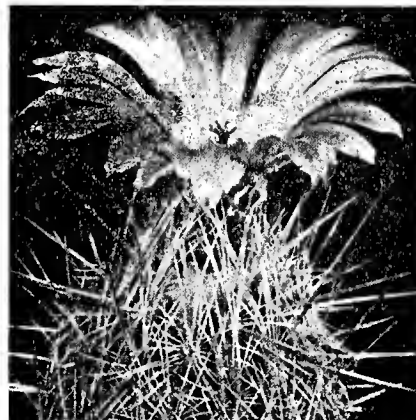
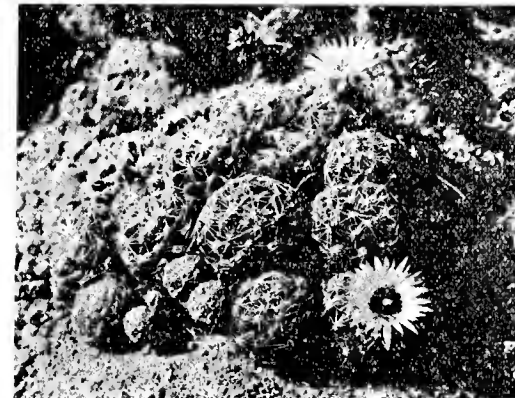
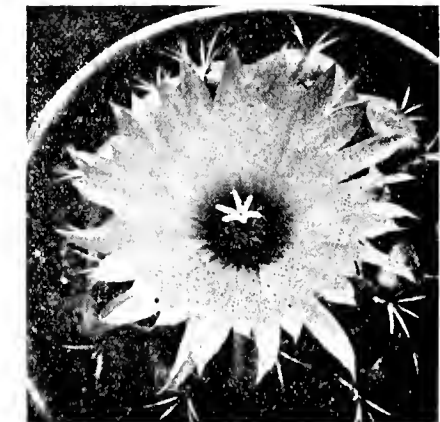
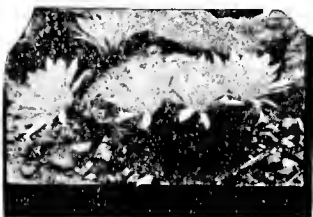
First plant (left) in front row is a several headed plant of *Homalocephala texensis* which has distribution through Northern Mexico, Texas, New Mexico. A flattened globular, strongly ribbed, flowers pink, rather large, day blooming, last 4-5 days, delicately fragrant. Large red fruit. Grows well and flowers in cultivation. Note: *Ferocactus macrodiscus* is undoubtedly congeneric with this species.

Second plant is a member of *Echinopsis*.

Third is an unusually fine specimen of *Echinocereus reichenbachii* var. *caespitosus* or the "White Lace" cactus, Texas. A very attractive species with large, fragrant pink blooms.

Cactus intortus—West Indies. Globose to cylindric. Mature plants form cephalium on top center, made of white wool and red bristles. Through cephalium appear rose flowers and rose colored fruit. It is one of the "Turks' Caps".

VOLUME IV. "THE CACTACEAE" CORYPHANTHANA

*Ancistrocactus scheeri**Thelocactus bicolor**Coryphantha runyonii**Coryphantha robustispina**Thelocactus bolansis**Coryphantha vivipara**Coryphantha bumamma**Coryphantha sulcata**Dolichothele sphaerica*

Ancistrocactus scheeri—S. Texas, Northern Mexico. Spines black and white variegated. Flowers Jan. Feb. greenish yellow.

Thelocactus bicolor—S. Texas, N. and Central Mexico. Spines highly colored, red and yellow. Flowers large, pink to purple. Three distinct varieties native of Texas.

Thelocactus bolansis—Northern Mexico. White interlocking spines, new spines sometimes with reddish tint. Flower purple.

Coryphantha runyonii—S. Texas, Northern Mexico. Forms low clumps; short tubercled. Flowers spring and fall, large pink to purple.

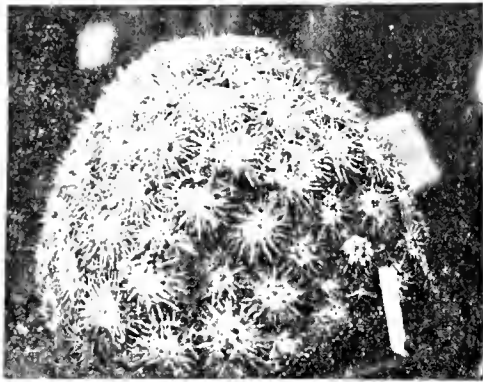
Coryphantha robustispina—New Mexico, Arizona, Northern Mexico. Densely, strongly spined. Rarely found. Flowers salmon.

Coryphantha vivipara—N. Texas to S. Canada. Plants solitary to clusters forming mounds. Shows many climatic and soil variations. Flowers pink to purple, very lovely. Fruit greenish-gray, seed reddish-brown. Photo—C. W. Armstrong.

Coryphantha cornifera—N. and Central Mexico. Globose, pale green, short tubercles, long central spine subincurved; flowers yellow tinged with red. Illustrated page 19.

Coryphantha sulcata—Texas. Cespitose, tubercles rather large, spines white, one stout central; flowers yellow with red center.

Dolichothele sphaerica—S. Texas, Northern Mexico. Low growing in flat clusters; shining green, yellow spined. Yellow flowers, very large, fine.

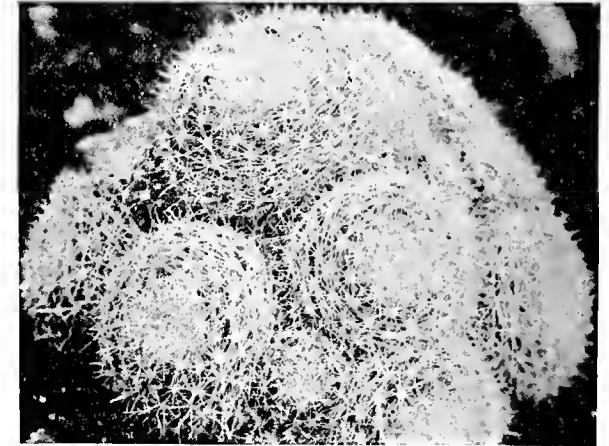


Neomammillaria compressa

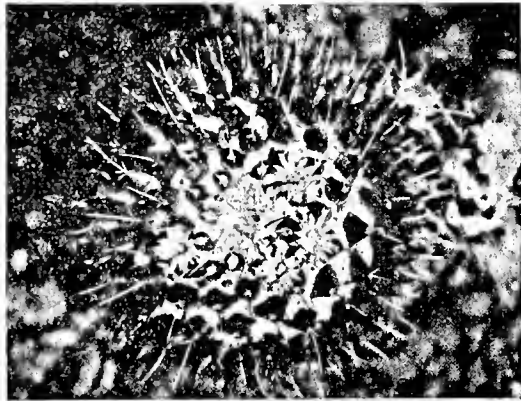


Back row: *Obregonia denegri*, *Neomammillaria plumosa*, *Echinocereus delaeti*.

Front row: *Neomammillaria schiedeana*, *N. multiceps*.



Photo—J. R. Pirtle
Neomammillaria candida rosea

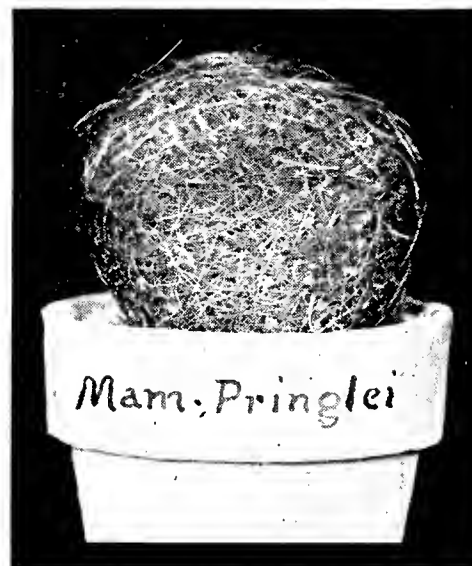


Photo—J. R. Pirtle
Neomammillaria sp.
Victoria, Tamps., Mexico.

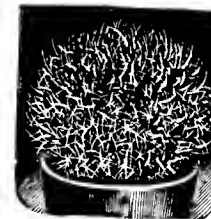
GENUS—NEOMAMMILLARIA



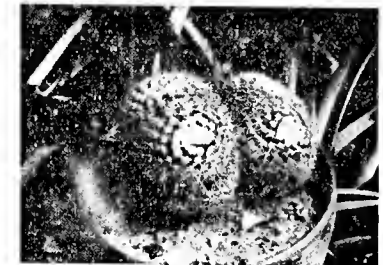
Neomammillaria densispina



Neomammillaria pringlei



Neomammillaria rhodantha.



Neomammillaria sp. Saltillo



Cochemiea poselgeri—Lower California

NEOMAMMILLARIAS

The genus *Neomammillaria* is noted for the intricate designs shown in the spine arrangements of almost all its species. They remind one of pictures of enlarged snow flakes. They grow from Nevada, U. S. A. to Northern South America. Many very fine ones grow in Mexico.

N. compressa—Central Mexico. Individual plants very nice, clumps handsome. Plant pale bluish green; axils of tubercles white-woolly, setose; principal spines 4, lower much longer. Flower pink. A variable species but does well in cultivation.

Obregonia denegri—South Central Mexico. A monotypic, short, globular, of regular formation. Has small well defined spines, small white flowers from center.

N. plumosa—North central Mexico. Individual plants small but grow into dense clusters, entirely covered by white plumose spines. Flowers white, red lined. A rare species, a gem among plants.

Echinocereus delaeti—Mexico. Completely hidden by long white, curled hairs. Stiff reddish bristles help to distinguish this from small specimens of *Cephalocereus senilis*.

N. schiedeana—Mexico. Axils of tubercles bear long bristle like hairs. Radiating golden spines on tips of tubercles star-like. Blossoms as seedling one to two years old. Good in cultivation.

N. multiceps—Texas, Mexico. Miniature clumping species, hairy. Varies from gray, yellow to reddish brown. Flowers yellow-salmon, fruit red.

N. candida—Mexico. Found as individuals and clumps. Plants hidden by close white or rose spines, depending on variety. Flowers rose. Seedlings attractive. Good species in cultivation.

Neomammillaria sp.—Victoria, Mexico. Most attractive species. Tubercles dark green, soft white wool all around them. Flowers dark rose.

Neomammillaria sp.—Saltillo. More compact, short tubercled. Flower rose.

N. rhodantha—Central Mexico. Cylindric, erect, dull green. Radial spines white, centrals longer, ascending, reddish brown. Flowers numerous, rose colored.

Cochemiea poselgeri—Southern Lower California. Stems numerous from a central root, spreading or pendent from rocks. Aereoles, upper axils white woolly. Central spine hooked. Flowers scarlet.

N. densispina (fuscata)—San Luis Potosi, Mexico. Specimens in nature entirely hidden by dense covering of spines; tubercles short, thick, not milky. Flowers purple, yellowish within.

N. pringlei—South Central Mexico—Solitary, globose; tubercles dull green, axils woolly; spines all yellow, numerous, interwoven. Flowers deep red.

Neomammillaria hahniana—Central Mexico. White spined, soft white woolly hair. Aptly called by many the "Old Lady" cactus. A rare and valuable species. Does well in cultivation. Rose flowers, lasting for weeks.

Neomammillaria elongata—Mexico—Densely cespitose, forming small erect clumps. Spines yellow, interlocking. Varieties—*minima*, *viperina*, *stella aurata* and *rufocrocea*.

Neomammillaria microcarpa—West Texas to Arizona, Northern Mexico. Light spines with dark, hooked tips. Flowers rose-purple.

N. carnea—Central and Southern Mexico. Plants cylindric, solitary or clustering. Tubercles 4 angled, milky, axils woolly; spines 4, lower the longest, Flower light pink. Illustrated page 30.

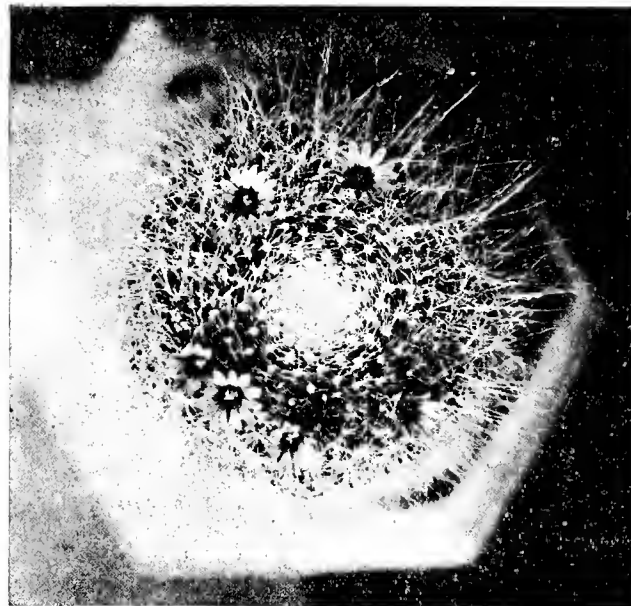
NEMATODES.

Plant collectors must always be on the watch for nematodes on the roots of their plants. Inspect new plants as received, and others as time arrives to transplant or when suspicion arises that they are not in the best of health or are not making the progress they should.

Nematodes form as round nodules along the roots and indicate the root knot disease which will eventually sap the life of the plant attacked. If they are found cut off roots at base of plant, wrap them in paper and burn. Wash base of plant with rubbing alcohol and re-root after several days in fresh dry soil. Boil the pot and burn the infected soil.



Neomammillaria hahniana

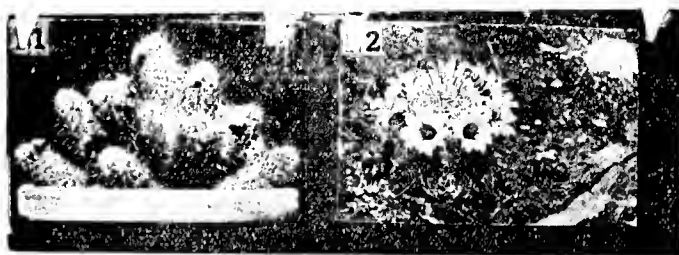


N. hahniana. Flowers rose

GENUS--NEOMAMMILLARIA

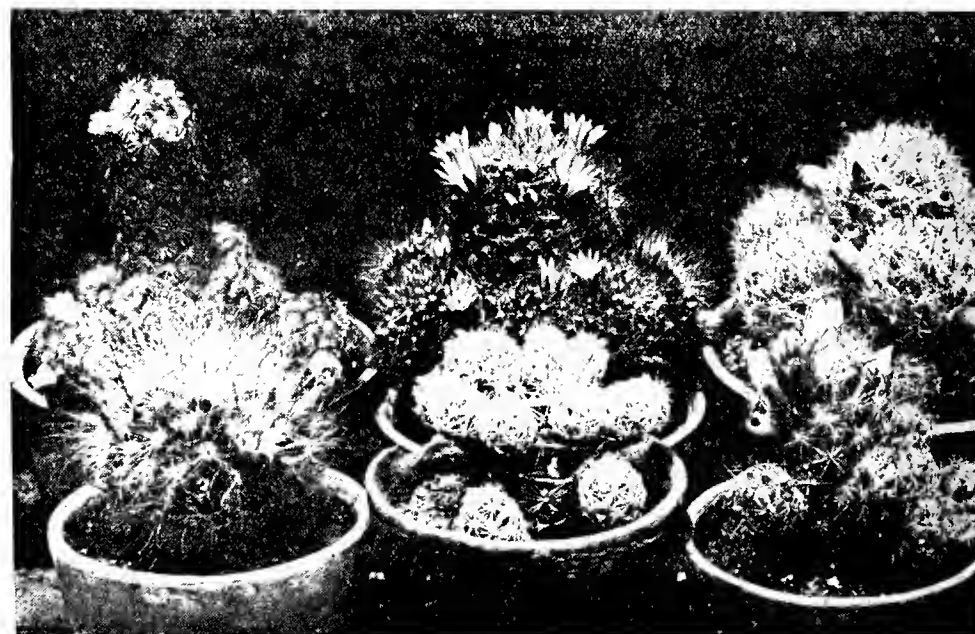


Neomammillaria carnea
Photo—Prof. Helia Bravo



Neomammillaria elongata

Neomammillaria microcarpa



A group of *Neomammillarias*

SUBTRIBE 7. EPIPHYLLANAE

Of 9 genera most commonly represented in this country by *Zygocactus*, *Schlumbergera* and *Epiphyllum*.

Zygocactus truncatus—Brazil. Short joints, dark glossy green, sharply serrate with 2 prominent teeth at apex. Flowers very lovely, white to scarlet, irregular. Under cultivation since 1818.

Schlumbergera gaertneri—Brazil—Joints short, flattened though usually larger than those of *Zygocactus*. Flower dark scarlet, rotate, regular.

Epiphyllum—West Indies, Mexico, various countries of S. America. Mostly epiphytic, branches long, flattened, leaf-like. Not spiny. Flowers usually large, some day, some night flowering. Many distinctly perfumed.

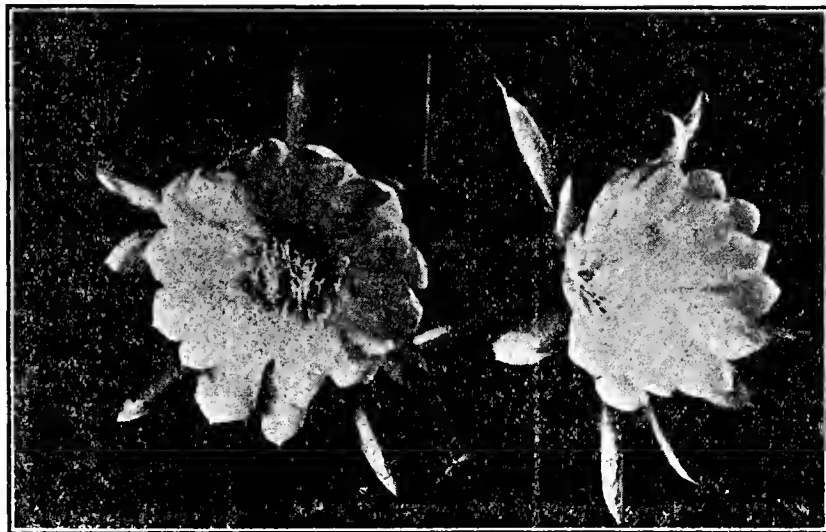
Cultural Direction Page 15.



Zygocactus truncatus grafted on *Acanthocereus pentagonus*.



Schlumbergera gaertneri graft on *Pereskia*



Flowers of an *Epiphyllum*



Epiphyllum hybrids in Bloom. White to Dark Red.



Epiphyllum strictum.

GRAFTING

There are many different reasons for the grafting of one species of cactus upon a different species but it is generally done to produce a stronger and more rapid growth and an increased flower production in the grafted species. The operation is simple and if done with accuracy, rapidity and cleanliness is almost uniformly successful. A very sharp, thin-bladed knife, a few cactus spines and some small rubber bands are the only implements needed.

The host plant is called the stock and the plant grafted into it is called the scion. The main requirement for success is to get-and to maintain-for a week or two an exact approximation between the freshly cut surfaces of stock and scion so that they unite exactly as do the edges of a cleancut flesh-wound when properly sutured. In grafting one of the globular cacti on a cylindrical species, such as *Trichocereus spachianus* or *Acanthocereus pentagonus*, select a stock of approximately the same diameter as the scion and cut it squarely across at right angles to the line of growth with one sweep of the knife. Cut off the base of the scion in the same manner and place the two cut surfaces together immediately and skewer the scion to the stock securely with two or three long slender spines. Pass the rubber band around the base of the stock bringing one end through the other, draw tight and bring the resulting loop up over the top of the scion so that it holds the scion tightly against the stock. Two or more bands may be used if necessary to an exact and firm approximation. Most stocks have sufficient spines to hold the lower loop from slipping upward and the spines, ribs, nipples or irregularities on the upper surface of the scion are enough to prevent the upper loop from slipping off. I prefer the rubber bands to twine as their elasticity keeps up a steady pressure while the twine may stretch, also the contraction of the rubber compensates for the slight shrinkage of the two cut surfaces and holds them together steadily and continually. In this type of grafting I have not found it necessary to protect the top of the scion with a pad of cork or paper.

Other forms of grafting are the "stab graft", the "saddle graft" and the "wedge graft". The stab graft is used in grafting one of the thicker cacti upon a slender and more or less woody stock such as *Pereskia pereskia* the diameter of the scion being double or more that of the stock. In this case the tip of the stock is shaved down on either side into a thin slender wedge and forced into the scion until the cut surface is completely buried. In scions with a thick and hard

outer surface it is better to make a slight incision to facilitate the entrance of the wedge. One spine through scion and stock is sufficient to hold this graft.

In case the scion and stock are of about the same diameter the saddle graft may be used. This is very similar to the stab graft but with a wedge corresponding to the wedge on the stock cut out of the end of scion. One spine through scion and stock is required and the base of the scion should be firmly bound with a rubber band both above and below the spine.

The wedge graft is the reverse of the saddle graft, the end of the scion is given the wedge shape and inserted into a corresponding cut in the stock, the rubber band being placed around the upper end of the stock. In grafting some of the very thin species, *Epiphyllums*, *Zygocactus*, *Schlumbergeras* etc., it may not be necessary to do more than make a straight cut in the stock but the scion should always be shaved down to a fine edge.

A very satisfactory variation of the wedge graft requires a special knife made somewhat like the old fashioned apple-corer but tapering to a slender point. With this knife a slender cone is cut from the top of the stock, the scion sharpened like a lead pencil, inserted and held by a spine. This is a very satisfactory method to use in grafting *Wilcoxias*, *Rhipsalis* and other very slender species. No wax is needed in cactus grafting but for some time I have practiced sprinkling Semesan saturated sand over all exposed cut surfaces and believe it has a very marked effect in prevention of rot.

Do not allow water to come in contact with fresh grafts and keep them in the shade for the first week. The rubber bands may be removed in from four to seven days but unless they show evidence of being too tight and strangling the plant it will do no harm to leave them longer.

Almost any cactus will "take" if grafted on a species of its own genus or of a genus further back in the evolutionary chain. Most species take well on *Pereskias*, *Epiphyllums* thrive wonderfully on *Notopaleas* and the rank growing *Opuntias*. *Trichocereus spachianus* and *Nyctocereus serpentinus* are excellent stock for *Echinocereus*, *Echinopses*, *Coryphanthas* and *Neomammillarias*. *Wilcoxias* and *Peniocereus greggii* grow rapidly on *Harrisia martini*. The most satisfactory stock that I have found for all purposes is *Acanthocereus pentagonus*.

W. E. LOWRY, SR., M. D.

A Page of Grafts



Left:—Graft of *Chamacereus sylvestrii* on *Acanthocereus pentagonus*, flowers orange-red.

Right:—Cactus *intortus* or "Turk's Cap." From the West Indies. The white woolly, red bristled cephalium is a natural growth in which are formed the rose colored flowers and fruit.



A GRAFT

Aporocactus flagelliformis (rat-tail) and *Zygocactus truncatus* (crab) on same graft.



A collection of grafted plants showing unusual forms which may be obtained. Picture shows plants of E. G. Greiner of St. Louis, a member of the St. Louis Cactus Association of some 40 years ago. The Association's motto was "Happy is the man who has a hobby".

Many photographs of the unusually extensive plantings of this well known dealer and collector offer proof positive of real accomplishments with his hobby.



A 2 year old graft of *Wilcoxia poselgeri* on *Acanthocereus pentagonus*. Flowers rosy purple, lasting, fragrant,—400 or more during one blossoming season.



Graft of a *Zygocactus* on *Acanthocereus pentagonus*. The latter is recommended for drooping species.



Majority are Texas-Mexican Border Species

LIST OF CACTI AND ROCK
GARDEN PLANTS.

- 1—Opuntia lindheimeri
- 2—Opuntia leptocaulis
- 3—Opuntia schottii
- 4—Opuntia ficus indica
- 5—Hamatocactus setispinus
- 6—Ancistrocactus scheerii
- 7—Echinocereus fitchii
- 8—Echinocereus enneacanthus
- 9—Echinocereus pentalophus
- 10—Escobaria runyoni
- 11—Dolichothele sphaerica
- 12—Lophophora williamsii
- 13—Wilcoxia poselgeri
- 14—Neomammillaria heyderi
- 15—Coryphantha runyoni

ALSO ROCK GARDENS.

- 16—Homalocephala texensis
- 17—Ferocactus hamatacanthus
- 19—Agave lechuguilla (Mexican)
- 20—Yucca treculeana
- 21—Yucca tenuistyla
- 22—Euphorbia jatropo berlandieri (large bulb, red flower.)
- 23—Euphorbia pedilanthus aphylla (dainty pink star shaped bloom, in clumps.)
- 24—Aloe vera, succulent
- 25—Manfreda variegata, hardy desert succulent
- 26—Dracena, for rock garden, landscaping

LARGER TYPES FOR DISPLAYS
RARE SPECIES UNDER PROPAGATION

- 27—Echinocereus papillosus, dwarf
- 28—Thelocactus bicolor (Mexican)
- 29—Opuntia linguiformis—rock gardens
- 30—Opuntia imbricata—rock gardens
- 31—Opuntia erinacea (grizzly bear)
- 32—Agave americana variegata
- 33—Manfreda variegata gigantea
- 34—Hechtia texana—Mexican bromeliad, red coloring, agavelike (unsurpassed for rock gardens.)
- 35—Acanthocereus pentagonus, tall stout Night Blooming Cereus, best for grafting.
- 36—Harrisia martini—stout climbing N. B. C—blooms large and fragrant.



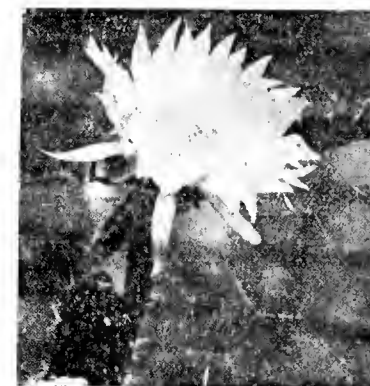
Dolichothele sphaerica



Thelocactus bicolor



Lemaireocereus
pruinosus



Acanthocereus pentagonus



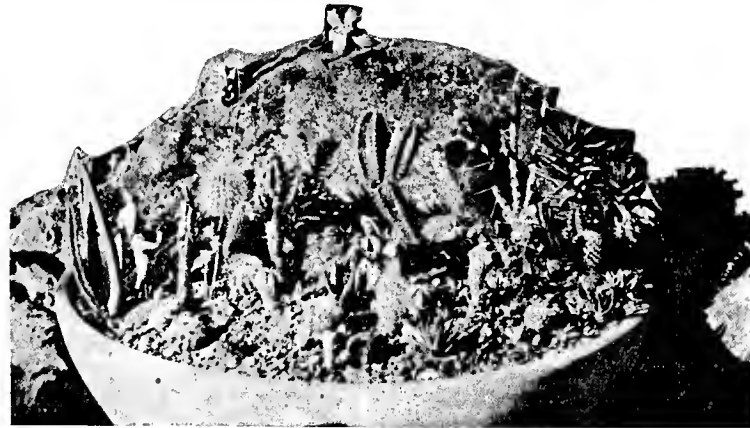
Echinocereus papillosus



Echinocereus fitchii



The handsome young plant couple enjoying their location on the overstuffed (rock) couch, under the parlor lamp are *Cephalocereus senilis* (Old Man) and *Neomammillaria hahniana* (Old Lady). He has a nice rock cushion while she has *Neomammillaria plumosa* (feather cactus).



A large size "Miniature Mexico" with mountain cemented across the back. Lower ones cemented in at various angles at its base make planting sections at different levels, adding variety and interest. Planting here illustrated contained many rare species and sold for \$10.



Simplest planting using the saucer to a big pot, some odd rocks, plants and figures.

How perfect a picturesque planting of cactus and succulents for the shut-in or convalescent! No other planting can arouse more of the patient's interest and at the same time require so little care.



Pieces of brick may be made into miniature primitive dwellings by adding a little thatched roof of woven coarse grass and painting in doors and windows.



This bowl is 12 inches across, of excellent depth, Mexican brown ware, glazed on the inside, cost about 50 cents. Carefully packed for shipping, weight about 5 lbs.

SUGGESTIONS FOR PLANTING "MINIATURE MEXICO".

Bowls used are from 8 to 20 ins. in diameter. They do not have drainage so each has 1 to 1½ inches of clean washed pebbles in the bottom. Now is the time to cement in thin slabs of rocks as miniature "mountains". (Use half fresh cement and the other half a mixture of coarse sand and small pebbles.) Stand the rocks in connecting lines so that they will be cemented one to another and to the bowl, for strength.

Let cement set a day and fill spaces to level of bowl with ideal cactus soil mixture. This soil will work down among the pebbles but so will the plant roots, the same way they do in Nature. Moisten soil sufficiently to hold plants in their places. Locate taller ones toward center, smaller ones grouped under them. This also carries out the idea of the way cacti grow naturally, as they are almost always found growing under trees, bushes, protecting ledges.

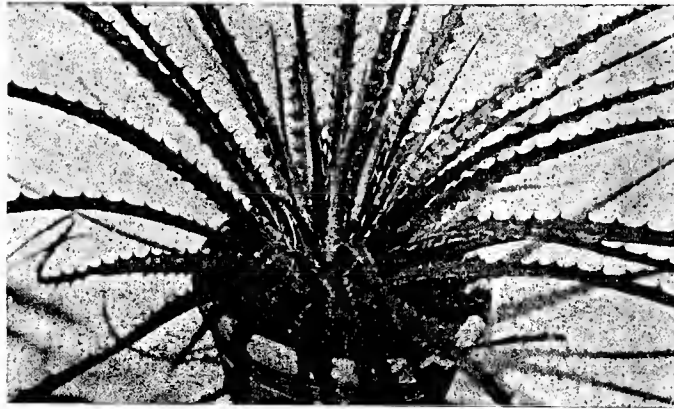
When all the little plants are in place, sprinkle soil thickly with clean washed pebbles. This gives a finished appearance of desert atmosphere and helps keep plants in place. Water sparingly until plants give evidence of having re-rooted, not oftener than once a week or every 10 days. After they have re-rooted water whenever soil is dry for an inch down from the surface.

Give morning sunshine after they have re-rooted, fresh air and rain water whenever possible.

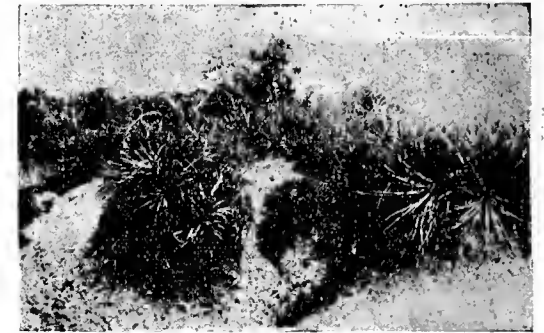
ROCK GARDEN SPECIES



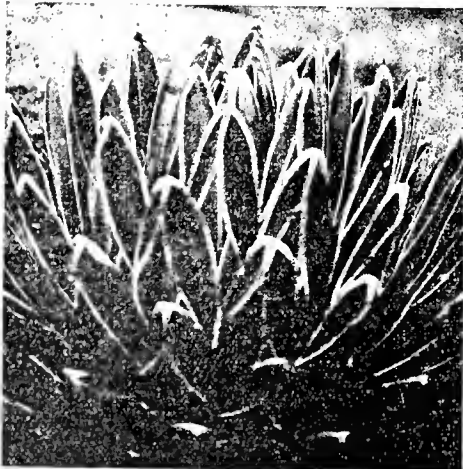
Hesperaloe engelmannii "Coral Yucca"



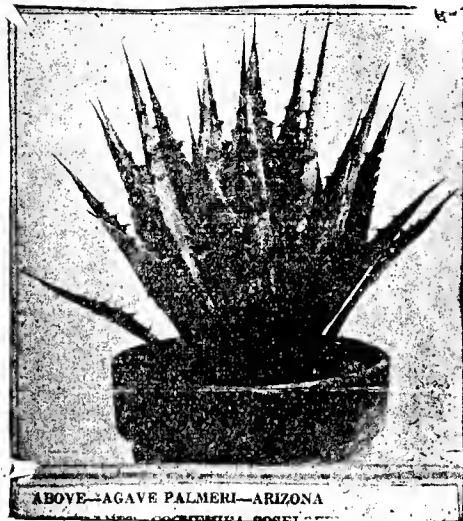
Hechtia texana
A plant in cultivation. Well formed.
Beautifully colored.



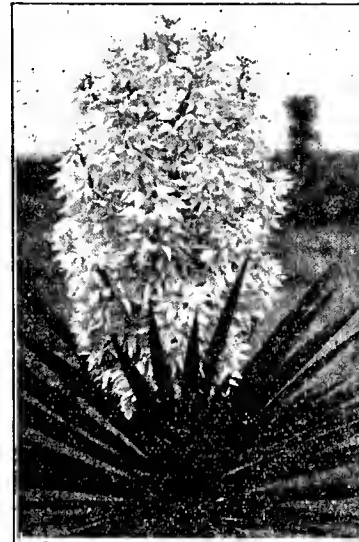
Hechtia texana—as found in native habitat. Grows in dense clumps, with plants facing out. It takes about two years of cultivation to get them in good shape for decorating rock gardens. In summer they are a silvery green; for fall, winter and spring they turn a bright apple red. Hardy.



Agave nickelsae



Agave palmeri—Arizona

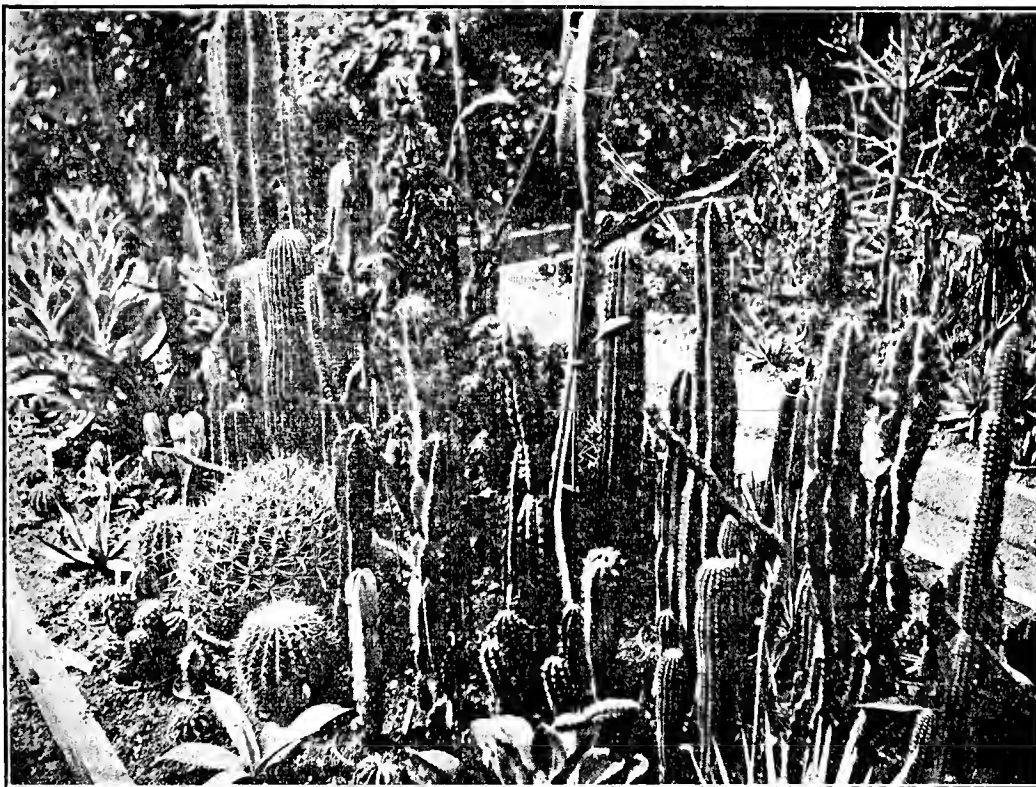


Yucca treculeana

Planting at right:—Tall plant at the back is Yucca treculeana. Below at lower left gray plants are Agave americana. Lower right the dark green plant is Agave lechuguilla.

Agave nickelsae (at left) is a very rare and beautiful species. Seedlings from 2 years up begin to show white markings.





Picture showing how Peter Hoffman, Florist, 92 Highgate Avenue, Buffalo, N. Y. takes care of his cacti and other succulents outdoors in the summer time. Picture made in 1920. Plants are in pots, imbedded, convenient for winter removal indoors. Mr. Hoffman wrote recently that many of these plants are still doing well in his collection. Their healthy appearance and longevity testify to the success of this plan for gardeners in cold climates.



Indoor collection of Mr. Hoffmann. Picture made in 1910. The majority of these plants are still living, a tribute to a student of cultural requirements and lover of the rare and unusual in plant life.



Cactus planting Lower Rio Grande Valley of Texas.— J. R. Pirtle.

SUCCULENTS

Succulent plants are to be found all over the world wherever plant life has had to adapt itself through the ages to irregular and scant water supply. Succulents occur in many plant families. Not all members of a family will be succulent. This is exemplified to us here in the United States by two euphorbias with which we are familiar: *Euphorbia splendens* or "Crown of Thorns" which is a succulent and our well known Christmas poinsettia which is not.

All cacti are succulents. In primitive struggles for survival they and members of other plant families were forced to adopt thicker, more fleshy leaves and stems and an almost armor-like toughness of skin for reduction of evaporation. The varied and fascinating forms they have adopted, their delicate mimicry colorings and exquisite flowerings and the fact that so many of them remain small are a few of the charms which make them irresistible to plant lovers.

Soil suitable to the majority of succulents is suggested as follows: Mix and sift one part broken clay, one part coarse sand and four parts of thoroughly decomposed leaf mold. Soil should be nourishing, not too heavy, allowing for quick drainage away from the roots which should not be given so much water very little will remain soggy for any length of time. In winter water very little if at all. A period of rest is advised then and temperatures approaching 55 to 45 are healthful. They need all the available winter sunshine but in summer most do better with protection from most direct rays.

The succulent collector will find "Succulents" by A. J. van Laren, published at 6162 North Figueroa St., Los Angeles, Calif., with its 150 species illustrated in color, to be a book of beauty and real service.

Haworthias are all of South African origin and are gems in any succulent collection for their unusual shapes, complicated construction and intriguing color. Even in maturity they are small which makes them of especial value in miniature plantings.

Haworthia margaretifera is one of the prettiest of the "white pearly" species. The dark green leaves bear pure white knobs or warts both above and below. In this species they are sprinkled while in *H. fasciata* they are in ornamental lines. *H. attenuata* has more delicately pointed leaves with "pearls" somewhat smaller but quite distinct.

Haworthia cymbiformis is noted as one of the "windowed" plants because of its almost transparent tips which let sunlight penetrate to its growing center. The regular rose formation is most attractive.

Gasterias are larger growing than Haworthias but are still among those plants most highly recommended for window sill gardening.

They may be smooth or covered with rough tubercles like seed pearls. The leaves sometimes grow parallel, at other times in a star-shaped whirl.

The genus *Aloe* is most interesting for its wide range of sizes, forms and colors. Mature forms of some are a few inches high while others grow to tree size. A most striking and popular species is *A. variegata*, the "partridge breast" *A. aristata* is very rare in collections as is also *A. ausana*.

Most members of the *Agave* are decorative as house plants only in young specimens. After a few years of cultivation they become too large for indoor or even greenhouse collections. *Agave nickelsae* is one exception. It is of slow very compact growth, in rosette formation, strikingly marked with pure white on dark green and is an outstanding species in any collection of rare plants.

Many members of the genus *Euphorbia* have adopted succulent form in their struggle for survival in the deserts and on the dry mountain slopes of Africa. Several are native to the Dutch East Indies and a few to the Americas.

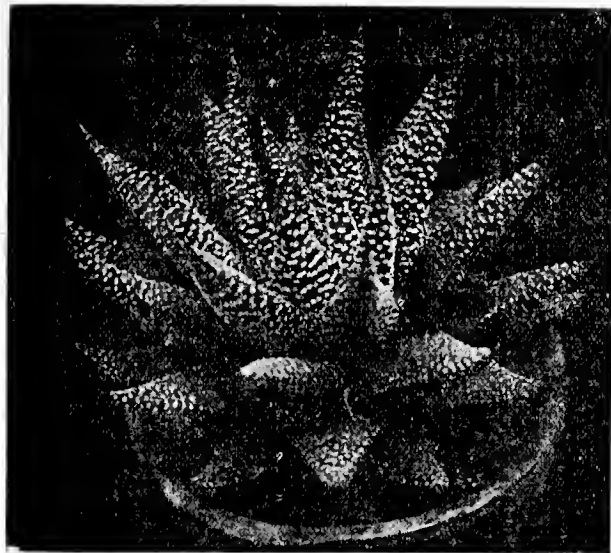
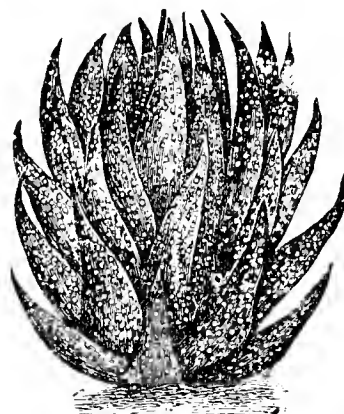
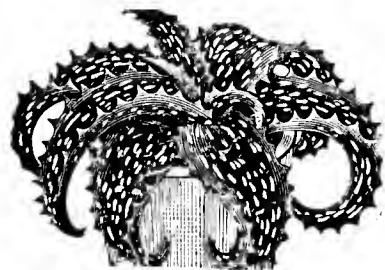
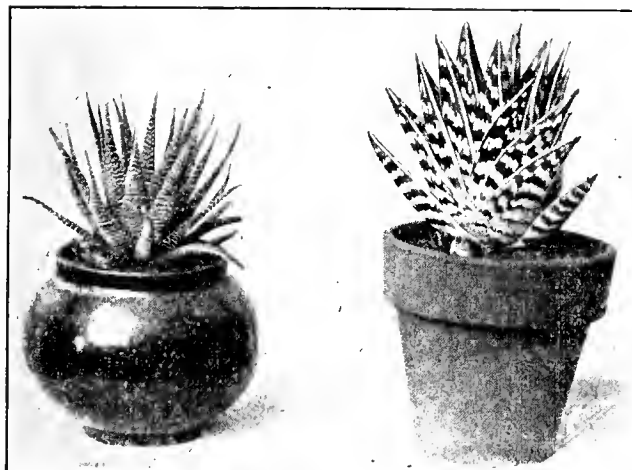
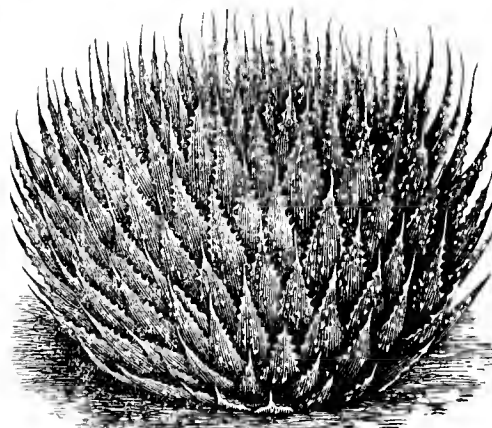
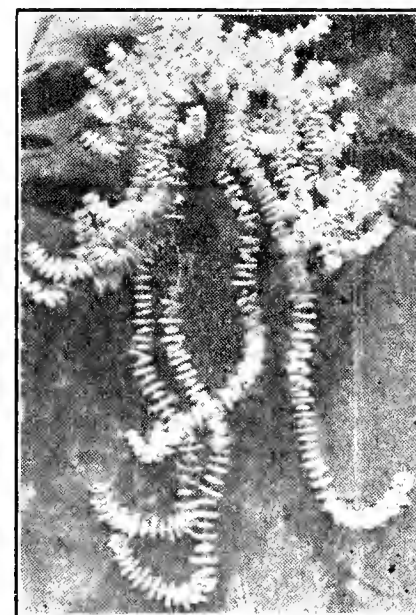
Succulent *Euphorbias* lending variety to collections include *E. lactea* from the Dutch East Indies and its much rarer form *E. lactea cristata* with its rock-like monstrose form; *E. canariensis* from the Canary Islands; *E. pseudocactus*; *E. obesa* the miniature foot-ball and *E. grandicornis* with its deep irregular cut-work edges.

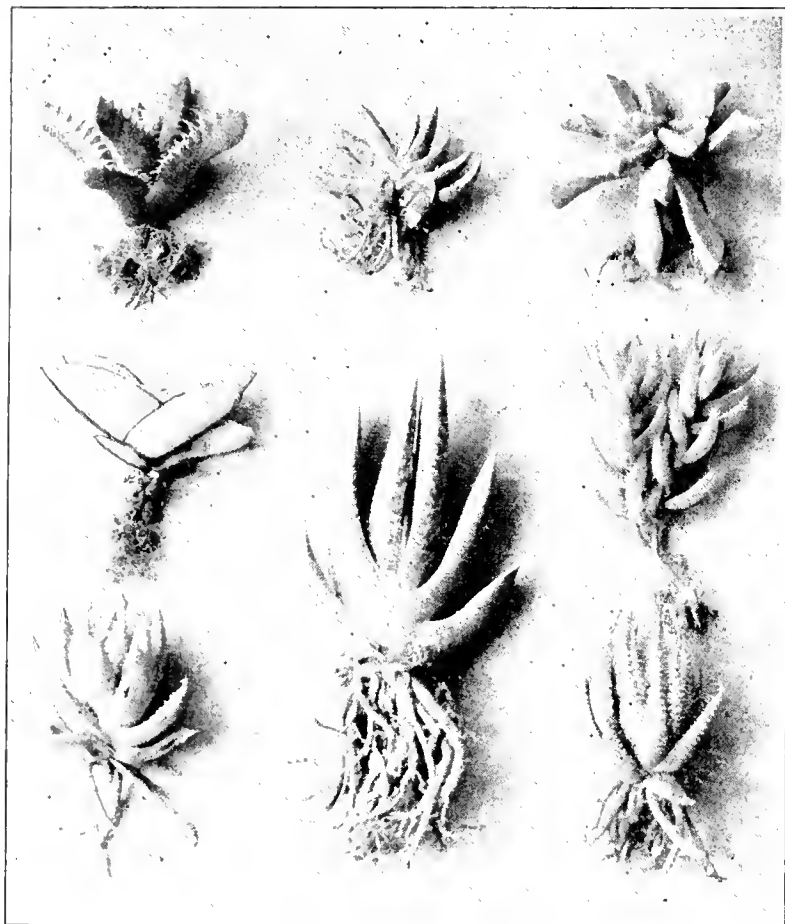
Faucaria tigrina, the most popular *Mesembryanthemum*, with its pairs of toothed leaves suggestive of a tiger's mouth grows easily and flowers freely. Flowers golden yellow. Soon clumps.

The Genus *Crassula* has many and varied forms, some of them the most fascinating among miniature plants. *C. perforata* looks like a necklace or buttons on a string. *C. falcata* with its odd shaped thick gray leaves has additional attraction because of its handsome, lasting red flowers.

Kleinia articulata the "Candle plant" and *Kleinia stapeliaformis* (both illustrated) are very different but interesting.

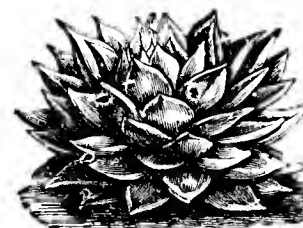
The order *Asclepiadaceae* with its many genera including *Stapelia*, *Huernia*, *Caralluma*, *Duvalia*, *Hoodia*, *Trichocaulon*, *Tavaresia* etc. includes a number of most curious succulent forms. The greater number are natives of South Africa but others are from India, Persia, Arabia, Abyssinia and Northern Australia. To those interested in their collection is recommended the handsomely prepared and illustrated book "The Stapelieae" by Alain White and Boyd L. Sloane, price \$3.00.

*Haworthia margaretifera**Haworthia coarctata*Back row: *Haworthia attenuata*, *Euphorbia grandicornis*, *Aloe distans*, *Aloe aristata*.Front: *Haworthia fasciata*, *Euphorbia obesa*, *Gastro-aloe beguinii*.*Aloe picta**Faucaria tigrina**Haworthia attenuata**Aloe variegata**Aloe aristata**Crassula perforata*

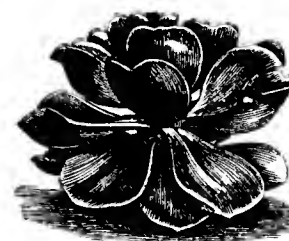


AFRICAN SUCCULENTS (Above)

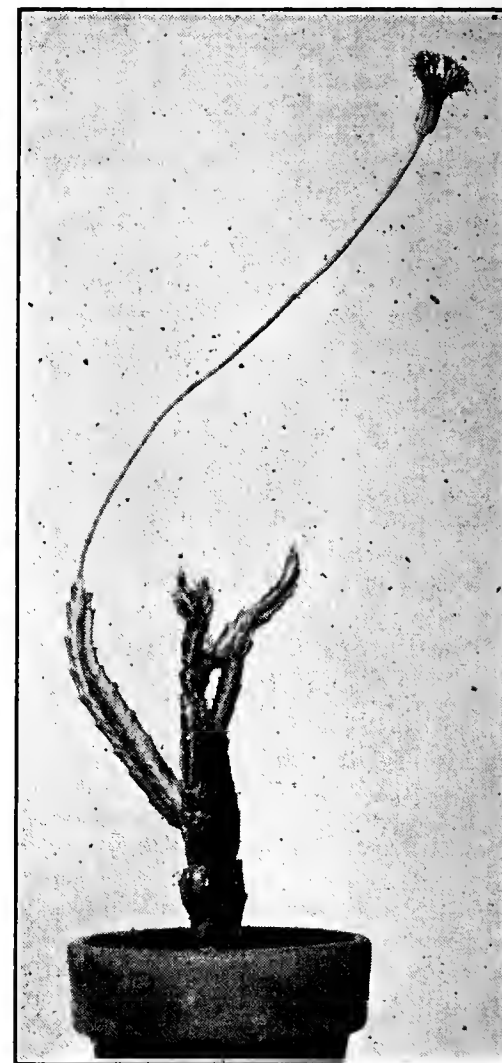
Faucaria	Gasteria	Mesem
tigrina	(small type)	rhomboideum
Roehia	Gasteria	Crassula
falcata	(large type)	trachysantha
Aloe		Haworthia
brevifolia		attenuata

Kleinia
articulata

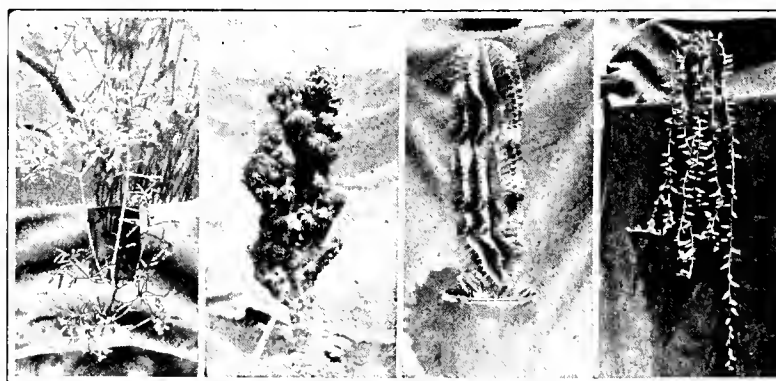
Urbinia agavoides



An Echeveria

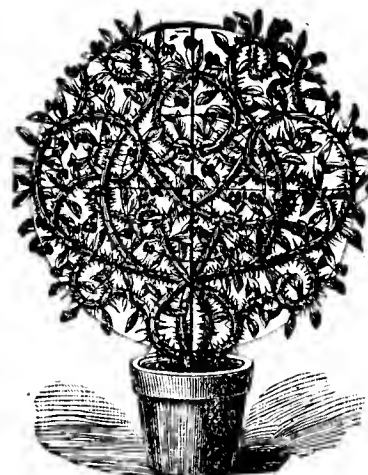


Kleinia stapeliaeformis

Rhipsalis
pendulifloraCereus
pitajaya
monstrosusEuphorbia
polygonaKleinia
radicans



Euphorbia lactea cristata



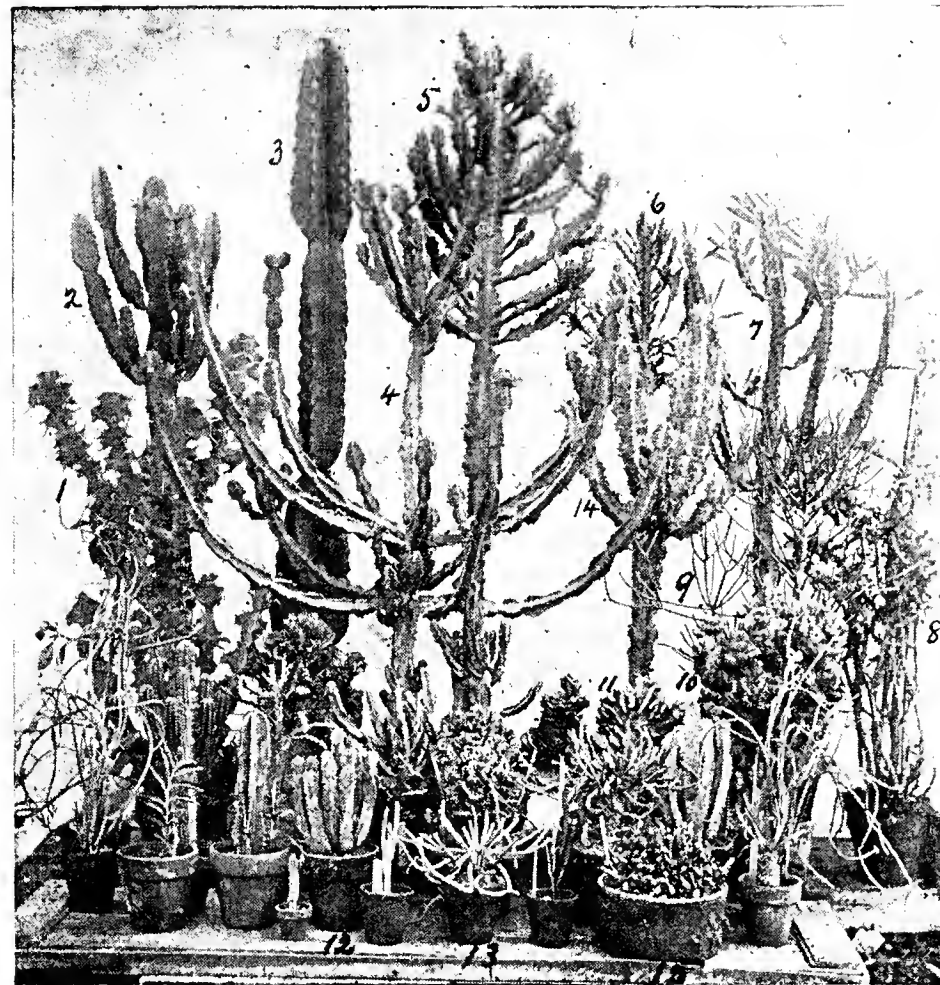
Euphorbia splendens
"Crown of Thorns"
Madagascar

CULTIVATION OF EUPHORBIAS

The succulent Euphorbias resemble cacti both in appearance and in the treatment they should be given. In their various forms they have adopted the most marvelous shapes, thorny armour and the milky juice which exudes when the skin is punctured.

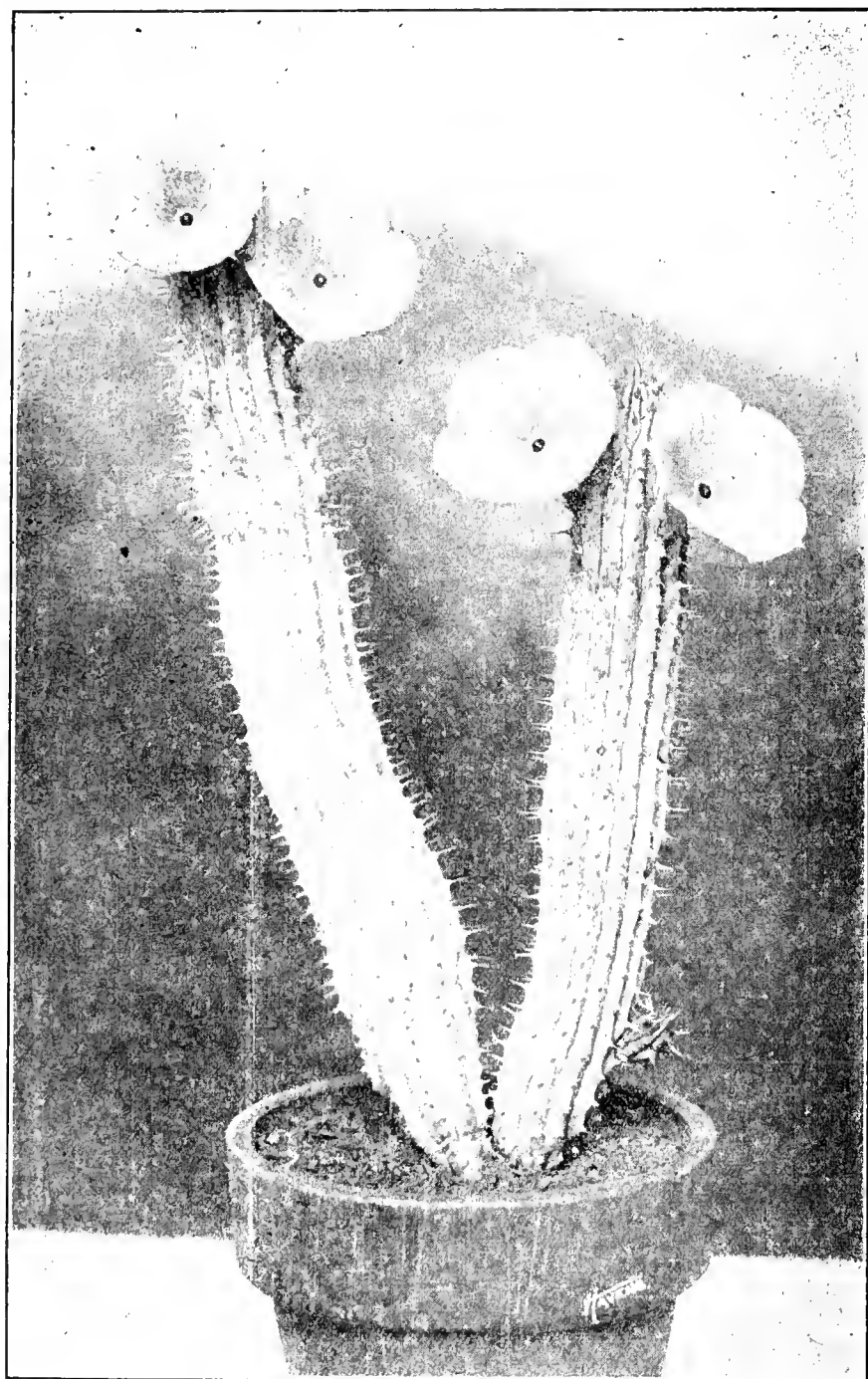
In winter Euphorbias do well in temperatures around 55 degrees. They should be given little if any water. During spring and summer soil should be kept moderately moist as this is their period of growth. They do well with plenty of sunlight but in a greenhouse it is possible to give them too much and they should be given protection from direct rays during the hottest part of the day.

Recommended soil mixture for them is as follows:—Two parts broken clay, two parts decomposed leaf mold and one part coarse clean sand. Use pots of size proportionate to plants. Cuts of Euphorbias should be allowed to callous over for 2 to 4 days and then rooted in sharp clean, slightly moist sand, in shade. After about 10 days plant in regular soil.

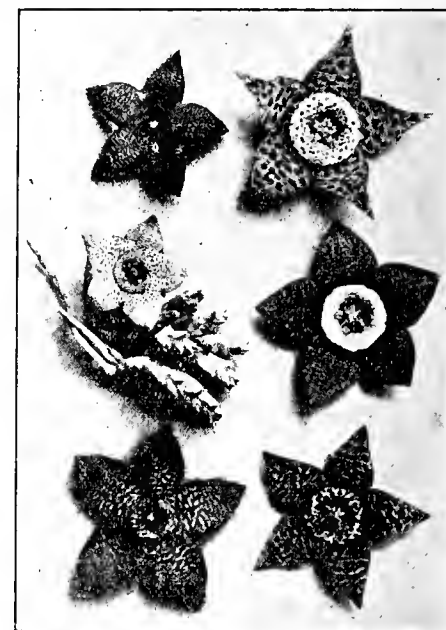


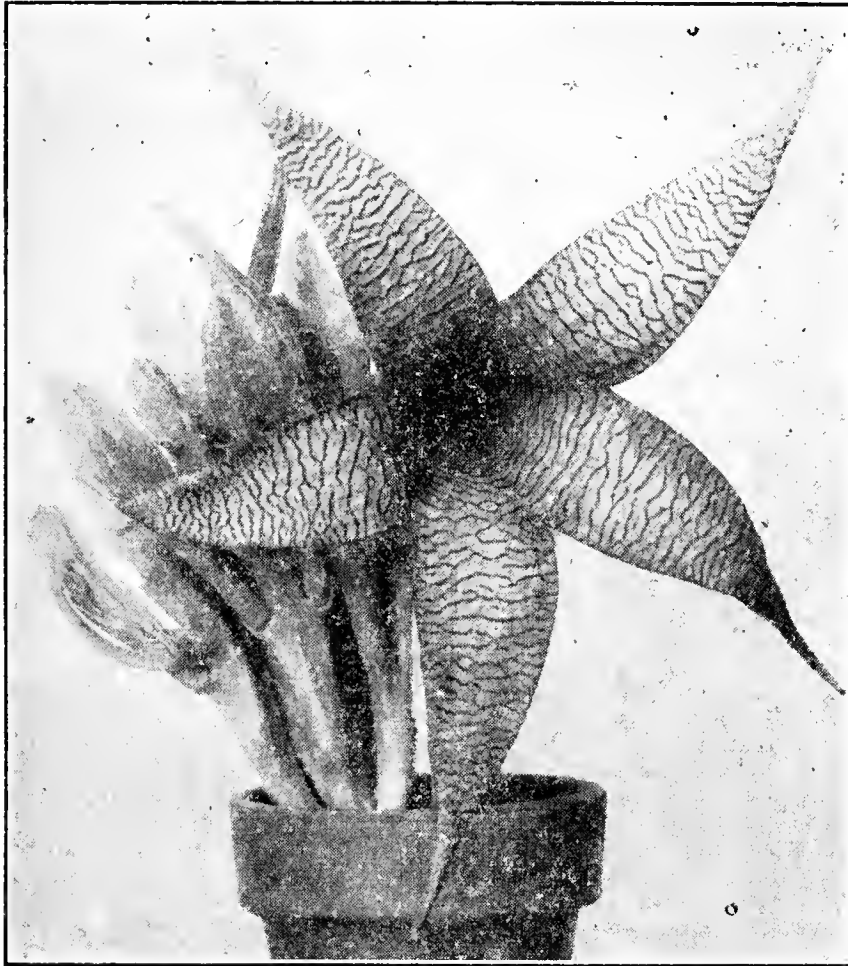
A GROUP OF EUPHORBIAS
(Africa, Canary Islands, Morocco)

- | | |
|---------------------------|-----------------------------------|
| 1. <i>E. grandicornis</i> | 8. <i>E. splendens</i> |
| 2. <i>E. canariensis</i> | 9. <i>E. tirucalli</i> |
| 3. <i>E. natalensis</i> | 10. <i>E. lactea cristata</i> |
| 4. <i>E. pseudocactus</i> | 11. <i>E. natalensis cristata</i> |
| 5. <i>E. lactea</i> | 12. <i>E. resinifera</i> |
| 6. <i>E. grandidens</i> | 13. <i>E. caput-medusae</i> |
| 7. <i>E. nerifolia</i> | 14. <i>E. coerulescens</i> |
| | 14. <i>E. ornithopus</i> |

*Hoodia gordonii*

Members of ASCLEPIADACEAE

*Piранthus foetidus*A *Stapelia* in flowerFlowers of *Stapeliaeae**Caralluma lutea*



Stapelia gigantea



1. *Euphorbia tirucalli*
2. *Euphorbia lactea cristata*
3. *Euphorbia grandicornis*
4. *Euphorbia nerifolia*
5. *Euphorbia lactea*

INSECT CONTROL

A recommended spray for killing all pests on cacti and other succulents is mixed as follows. To a quart of denatured alcohol add gradually about one tablespoonful of a fly spray such as Ocedar. The spray is shaken up with the alcohol and only as much is added as will dissolve. Use small sprayer. Two sprayings about a week apart should get all pests and their eggs,—scale mealy bug, all types of aphids and Red Spider.

When you have scale on your plants look for ants and get rid of them.

When you find mealy bugs examine roots of plants. If found there soak with a solution of Black Leaf 40 two or three times at weekly intervals, in addition to spraying the plants. Use a weaker solution for spraying seedlings and succulents than for thicker skinned plants.

PLANT LISTS FOR COLLECTORS

Price lists of rare plants and seedlings available in the nursery are prepared each year and will be mailed on request.

The Shiner Cactus Nursery has for constant reference all 4 volumes of "The Cactaceae", by Britton and Rose, which is the world's recognized encyclopedia on cactus. This investment (the 4 volumes being valued at about \$200) has enabled this nursery to give its customers an unusual service in correctly named plants.

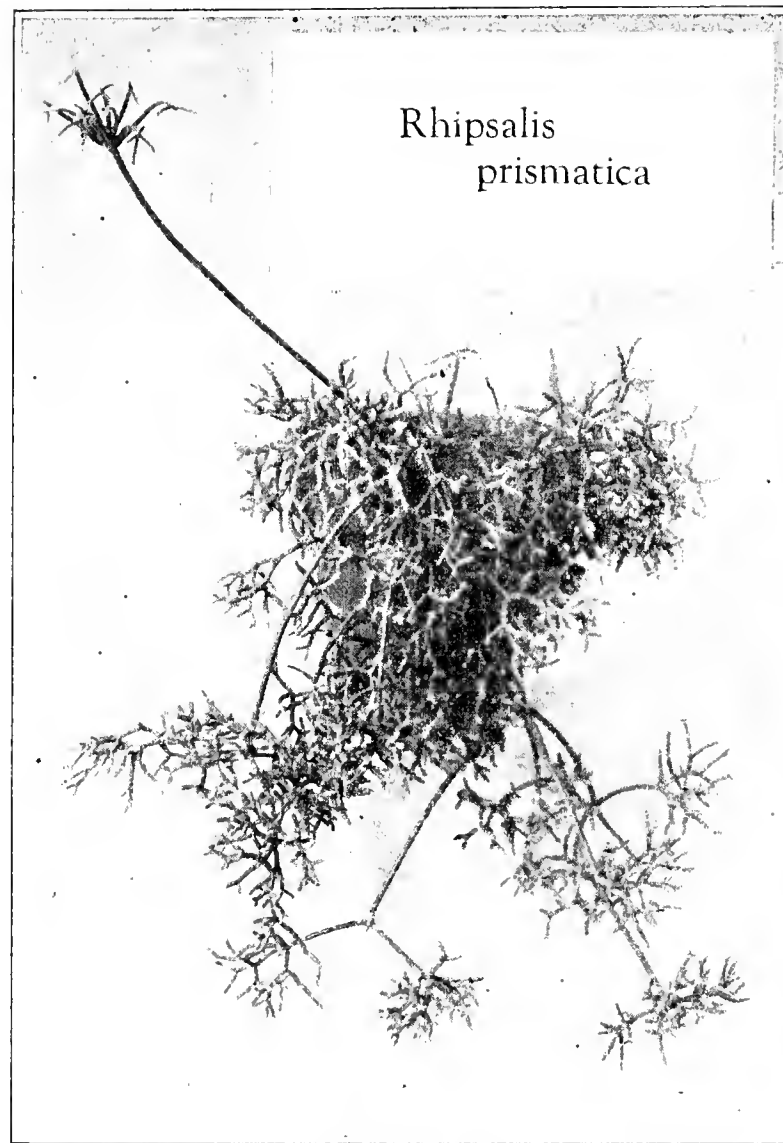
FOR DEALERS

New wholesale lists for quantity orders, also special assortments for combination bowls, miniature gardens and specimen exhibits.

Requests for wholesale lists should be written on dealer's letter head.

TERMS

Our business is conducted entirely on a "Cash with Order" basis. Eliminating all possible overhead we concentrate on operating a real nursery and are able to retain old customers and obtain new ones by our policy of furnishing only choice plants, reasonably priced.



*Rhipsalis
prismatica*

Rhipsalis (rice cactus)

Cacti, usually epiphytic, stems much branched, terete, angled or much flattened or leaf-like. Flowers small, dainty, last 4-8 days. There are 57 or more species found in Florida, Mexico, West Indies through South America to Argentina. Do best grafted.

Rhipsalis form the only exception to the statement that all cacti are found in the Americas, several species having been found in tropical Africa and in Ceylon.

ALL SHIPMENTS ARE NET F. O. B. LAREDO

Parcel Post.

For orders of small plants and seedlings allow 20 per cent for postage; for larger sizes 20 percent. We will return any over allowance or send extra species, as requested.

We pack carefully in stout cartons. Special packing is made for winter shipments to the north.

Express

We recommend Express Charges Collect as the most satisfactory method of shipping large plants or collections weighing 10 lbs. or over.

We are experienced in packing and shipping to foreign countries.

Members of

The Cactus and Succulent Society
of America

VISIT LAREDO

"The Gateway to Mexico"

While in Laredo be sure to visit the SHINER CACTUS NURSERY, located on the Heights at 2202 Market St.

Directions are given at the leading Hotels, Tourist Camps, the Chamber of Commerce, and the local headquarters of the American Automobile Association, Charles Mumm, Secretary.

JOHNSON CACTUS GARDENS

HYNES, CALIFORNIA

DATE.

PLEASE FILL IN

STATE

WE BRING OUR NURSERY TO YOUR DOOR! PLANTS ARE SHIPPED POSTPAID.

[illegible]

FOR INTERESTING BOOKS AND PERIODICALS TURN THIS SHEET OVER

NEW CACTUS BOOKS and PERIODICALS



HART'S TONGUE

One of the best succulents. Plant it in an ornamental pot. 25c.

Cactus in the Home. Have you questions to ask about your cactus and succulents? Soils, sunlight, how to make them bloom, when to water? This 50-page booklet answers all your questions sensibly and fully. I fully recommend it. 50c.

The Desert Magazine. Every Cactus and Succulent fancier and nature lover must have this splendid monthly magazine. Interesting, helpful articles about the culture of your plants. Articles on the birds and animals inhabiting the deserts. Sidelights on the deserts of Africa, Australia, South America, the Canary Islands, etc. Would you like to know the latest things about your Cacti with illustrations of rare and curious kinds? Once a month this journal will come to you crammed full of helpful articles and photographs. \$1.50.

The Stapeliaceae. By Alain White and Boyd L. Sloane. This book has been a work of love, as you will see when you receive it. Handsomely illustrated with scores of beautiful photographs, it deals in detail with this extremely interesting group of desert plants. Among them are found some of the largest and certainly most curious flowers known. Every fancier will need this splendid book for reference, for it is simply written but scientifically accurate, giving cultural details besides a digest of the scattered literature of other writers. \$3.

Cactus Culture. By Ellen D. Schultz. A well illustrated book of 157 pages. Fine chapters on Indoor Cactus Gardens, Building the Outdoor Cactus Garden, Grafting, How to Recognize a Cactus, etc. You will enjoy having it to turn to. \$2.00.

Cactus Soil Conditioner. See Cactus catalog for cactus soil conditioner. Instructions sent with each order.

Cactus and Succulent Journal. No one interested in cacti can afford to be without this monthly magazine. A chatty journal profusely illustrated, dealing with the culture and care of Desert Plants. There are

YOU are missing half of the pleasure of growing these interesting plants if you do not have some book of reference to turn to when you are perusing a catalog or when you want to know further about the plants you already have. There is a great American Cactus and Succulent Society with hundreds of members while in Europe every country has a National Cactus Society. The monthly magazines published about these desert dwellers are full of interesting data. Many of the books are well illustrated, some having beautiful colored plates. All are of interest to the cactus fan.



HEDGE HOG CACTUS
It blooms anywhere. Pink blossoms the size of Easter Lilies. 25c.

articles for the beginner and articles taking up the latest scientific details. It is the official publication of the Cactus and Succulent Society of America. Join the hundreds of your fellow fanciers who use this for their meeting ground. \$3 includes membership and a year's subscription.

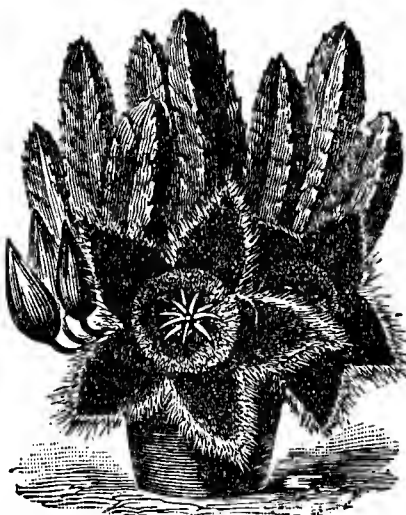
Cactus. By A. J. Van Laren. The most gorgeously illustrated book on plants it has been my good fortune to see! There are 133—count them—colored plates of succulents. Each plate is a faithful record of one plant in brilliant clear colors! The text is a mine of information written so simply that everyone can understand it, yet scientifically accurate. I recommend this also as a book worth twice the price. \$5.20.

The Culture of Cacti. By Harry Johnson. This helpful illustrated pamphlet contains the condensed knowledge necessary to success with these most interesting plants. Remember it is sent free with every order shipped you by the Johnson Cactus Gardens.

The Cactus Book. By Dr. A. D. Houghton. An interesting book that every fancier will enjoy with chapters on Window Sill Gardens, Cactus Rockeries, Propagating, Grafting, etc. Introduces you to 1000 kinds. \$2.25.

Our Native Cacti. By E. B. Higgins. Many splendid illustrations of cacti, some in color. An interesting, chatty book telling a thousand useful things about our desert friends. The photographs tell a story in themselves. \$2.65.

The Bulletin of Cactus Research. A monthly journal splendidly illustrated of the beautiful new cacti that are being found principally in South America. It contains information of the greatest interest both for the amateur and for the scientist. Many new species are here published for the first time with accurate descriptions and clear photographs showing the plants in bloom. Notes on the conditions under which they grow and synopses of cactus regions are also given. No fancier can afford to be without it. A German magazine printed in English, French, German and Dutch. I will accept subscriptions at \$1.75 per year.



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These Starfish Flowers are most striking with their large, fleshy, purple flowers, heavily fringed with violet hairs. They grow and flower freely in quite small pots. Some have flowers 14 inches across. Amongst the largest flowers known. Attract attention wherever shown. 35c. Three large flowered kinds. \$1.

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WE WOULD APPRECIATE THEIR NAMES SO THAT WE MAY SEND THEM OUR CATALOG

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